WM-FX651/FX653/FX655

SERVICE MANUAL

Ver 1.1 2002. 01

Photo : WM-FX651

AEP Model
WM-FX651/FX653/FX655
E Model
WM-FX653/FX655
Australian Model
Tourist Model
WM-FX655
Canadian Model
WN-FX653

Manufactured under license from Dolby Laboratories Licensing Corporation.
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Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MT-WMEX550-125

SPECIFICATIONS

Radio section

Frequency range
FM : 87.5 - 108 MHz
AM : 531 - 1,602 kHz

Tape section

Frequency response (Dolby NR off)
Playback : 20 -18,000 Hz
Output
Headphones (🎧 REMOTE jack)
Load impedance 8 - 300 ohms
Power output
5 mW + 5 mW (16 ohms)

General

Power requirements
1.5 V
Rechargeable battery
Dimensions (w/h/d)
Apporx. 109 × 79.2 × 25.9 mm, incl. projecting parts and controls

Mass
Approx. 150 g
FX655 : Appox. 196 g incl. rechargeable battery, headphones with remote control and cassette
FX653 : Approx. 196 g incl. rechargeable battery, headphones with remote control and cassette
FX651 : Approx. 183 g incl. rechargeable battery, headphones and cassette

Supplied accessories
Battery case (1)
Stereo headphones with remote control (1) (FX655/FX653)
Stereo headphones (1) (FX651)
Clip (1) (FX655/FX653)
Battery charger (1)
Rechargeable battery (NC-6WM, 1.2 V, 600 mAh, Ni-Cd)(1)
Rechargeable battery carring case (1)
Carring pouch (1)

Design and specifications are subject to charge without notice.

RADIO CASSETTE PLAYER

9-923-157-12
2002A1600-1
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Sony Corporation
Personal Audio Company
Published by Sony Engineering Corporation

SONY®

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Flexible Circuit Board Repairing

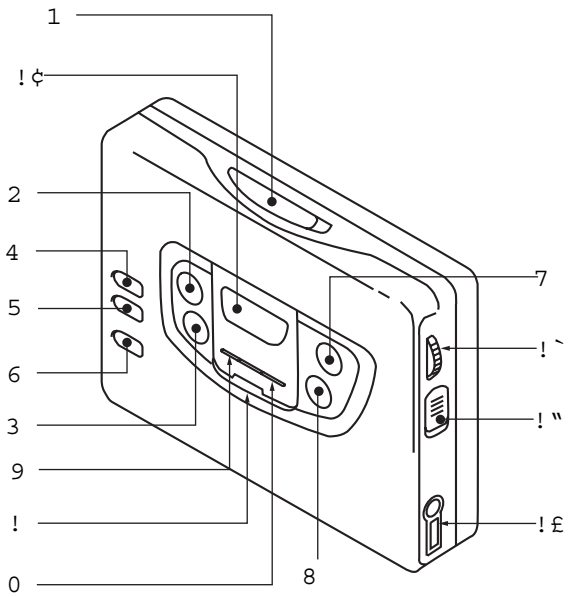
- Keep the temperature of the soldering iron aroud 270˚ C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1
GENERAL

• LOCATION OF CONTROL



1 OPEN knob

2 PRESET + /AMS FF button

3 PRESET – /AMS REW button

4 TUNING + button

5 TUNING – button

6 ENTER button

7 ˇ /REPEAT button

8 p /RADIO OFF button

9 MENU button

0 SET button

!` VOLUME knob

!" ◢— HOLD knob

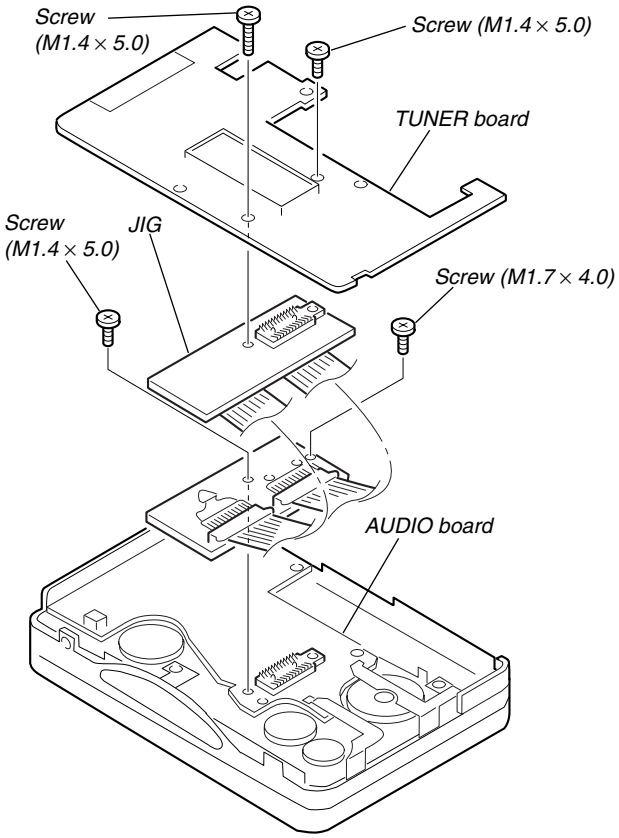
!£ 2 REMOTE jack

!¢ Display window

! BAND button

SECTION 2
SERVICE NOTE

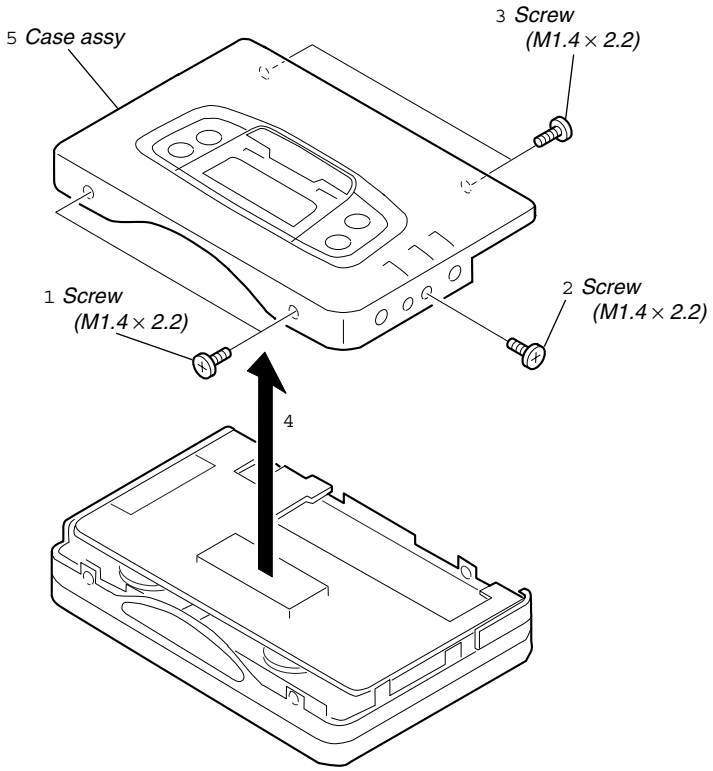
• Regarding the method of adjustment and voltage check, perform sections 3-1 and 3-2 of the DISASSEMBLY, and attach the JIG to the AUDIO board as shown below.



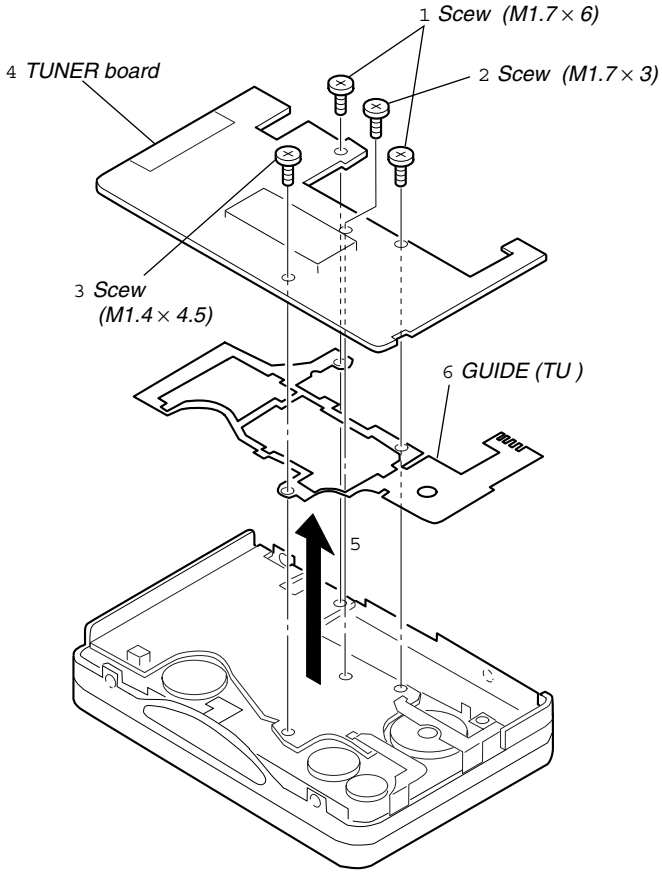
SECTION 3
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

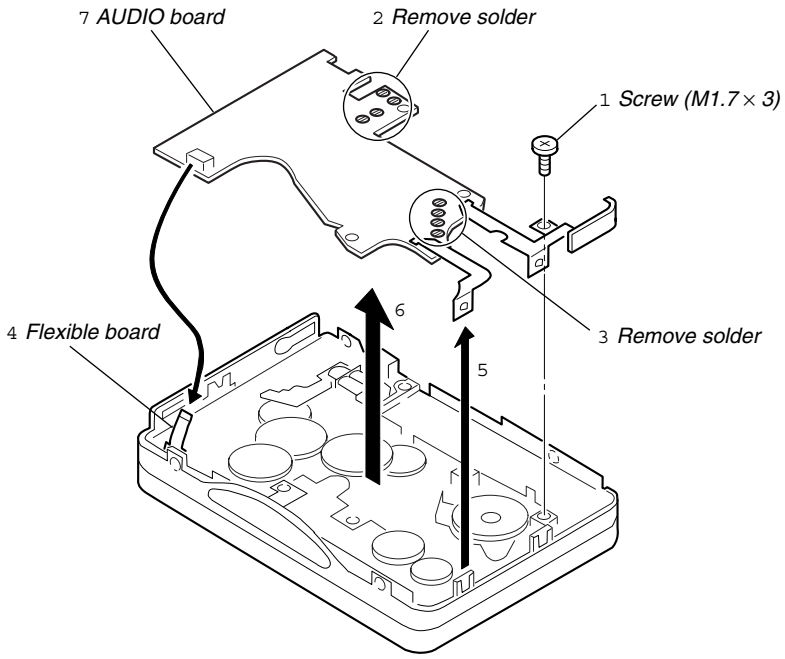
3-1. CASE ASSY REMOVAL



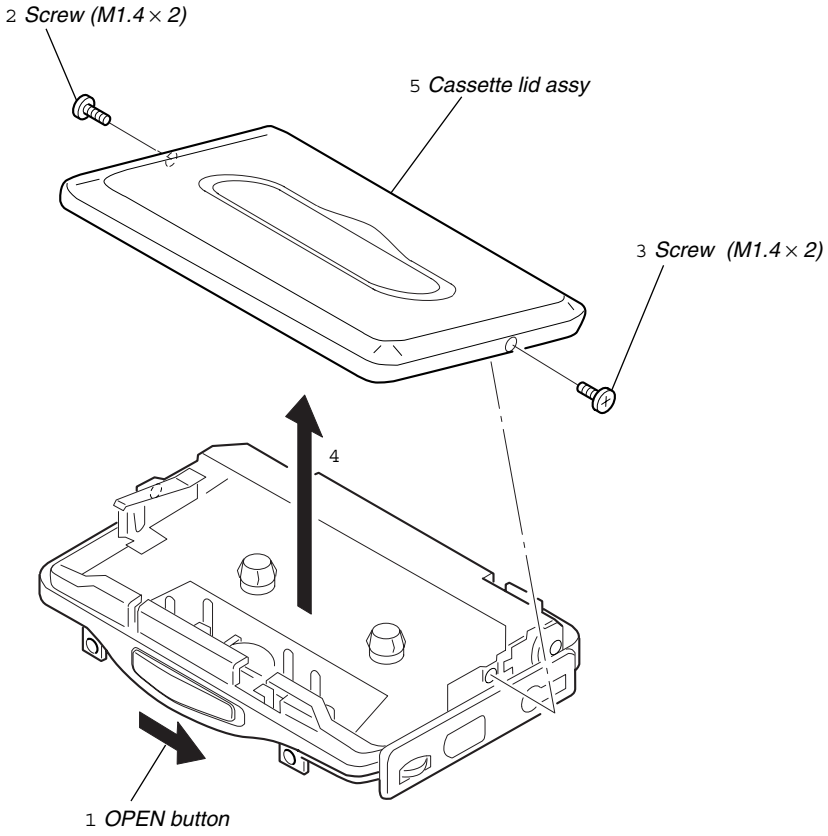
3-2. TUNER BOARD REMOVAL



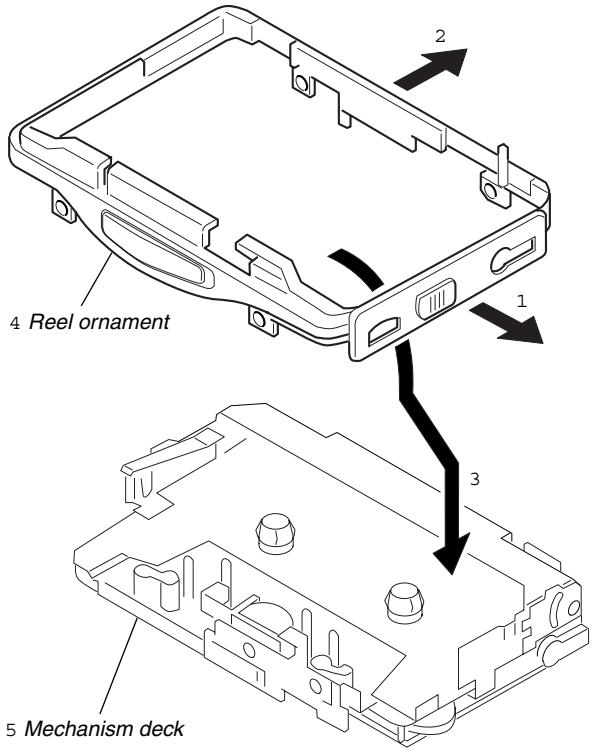
3-3. AUDIO BOARD REMOVAL



3-4. CASSETTE LID ASSY REMOVAL



3-5. MECHANISM DECK REMOVAL



SECTION 4
MECHANICAL ADJUSTMENT

PRECAUTION

1. Clean the following parts with a denatured-alcahol-moistened sweb :
   Playback head　　Pinch roller
   Rubber belt　　Capstan
2. Demagnetize the playback head using a demagnetizer.
3. Do not use a magnetized screwdriver for adjustments.
4. After adjusting, apply screw-locking compound onto the adjusted parts.
5. Unless specified otherwise, use a specified voltage (1.3V) to perform the adjustments.

Torqu Measurement

Mode	Torqu meter	Meter reading
FWD	CQ-102C	20 - 30 g · cm
FWD Back Tension		0.4 - 2.0 g · cm
REV	CQ-102RC	20 - 30 g · cm
REV Back Tension		0.4 - 2.0 g · cm
FF	CQ-201B	More than 40 g · cm
REV		

SECTION 5
ELECTRICAL ADJUSTMENT

PRECAUTION

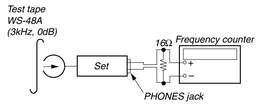
1. Specified voltage : 1.3V
2. Switch position
   DOLBY NR switch　　: OFF
   AVLS switch　　: OFF

CASSETTE SECTION

Test Tape

Type	Signal	Purpose
WS-48A	3kHz, 0dB	Tape Speed Adjustment

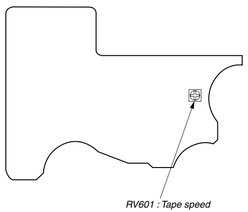
Tape Speed Adjustmnet
Procedure :



1. Playback WS-48A (Tape center part) in the FWD state and adjust RV601 so that the frequency counter reading becomes 3,000Hz ± 30Hz.
2. Playback WS-48A (Tape center) in the REV state.
   Check that frequency counter reading is within 2.0% of the reading of step1.

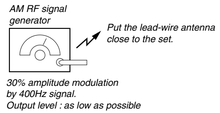
Adjustment Point :

[MAIN BOARD] — SIDE A —

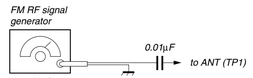


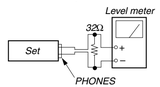
TUNER SECTION

[AM]
BAND switch : AM



[FM]
BAND switch : FM





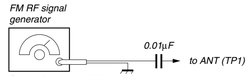
• Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L4	621kHz
CT1	1,395kHz

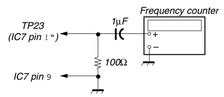
FM IF ADJUSTMENT	
Adjust for a maximum reading on level meter.	
L3	10.7MHz

FM VT VOLTAGE ADJUSTMENT	
1.1V ± 0.05V	
L2	76MHz

FM VCO Adjustment
Procedure :

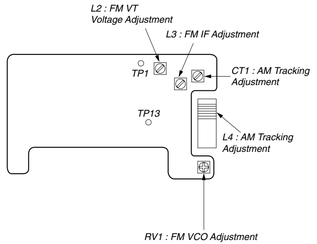


1. Connect the frequency counter to the positions shown below.
2. Turn the set to 98MHz.
3. Adjust RV1 for 19kHz ± 100Hz reading on the frequency counter.



Adjustment Parts Location :

[TUNER BOARD] — SIDE A —



SECTION 6
EXPLANATION OF IC TERMINALS

• IC1 TC9326F

Pin No.	Function	Pin Name	I/O	Circuit	INT	ACT	Description	Remarks
1	COM 1	COM 1			—	—	Common terminal.	
2	COM 2	COM 2			—	—	Common terminal.	
3	COM 3	COM 3			—	—	Common terminal.	
4	S1	S1			—	—	Segment output terminal.	
5	S2	S2			—	—	Segment output terminal.	
6	S3	S3			—	—	Segment output terminal.	
7	S4	S4			—	—	Segment output terminal.	
8	S5	S5			—	—	Segment output terminal.	
9	S6	S6			—	—	Segment output terminal.	
10	S7	S7			—	—	Segment output terminal.	
11	S8	S8			—	—	Segment output terminal.	
12	S9	S9			—	—	Segment output terminal.	
13	S10	S10			—	—	Segment output terminal.	
14	S11	S11			—	—	Segment output terminal.	
15	S12	S12			—	—	Segment output terminal.	
16	S13	S13			—	—	Segment output terminal.	
17	S14	S14			—	—	Segment output terminal.	
18	S15	S15			—	—	Segment output terminal.	
19	S16	S16			—	—	Segment output terminal.	
20	S17	S17			—	—	Segment output terminal.	
21	S18	S18			—	—	Segment output terminal.	
22	S19	S19			—	—	Segment output terminal.	
23	S20	S20			—	—	Segment output terminal.	
24	S21	S21			—	—	Segment output terminal.	
25	S22	S22			—	—	Segment output terminal.	
26	R DATA OUT	P13-1	O	Output	H	—	Remote control data output.	VLD at High level.
27	DDC1 CTL	P13-2	O	Output (Nch)	Hi-imp	L	DDC control terminal (when DDC ON = L).	Pull-up at outside (TUNER side).
28	BAND AM/FM	P13-3	O	Output (Nch)	Hi-imp	—	BAND control output (when AM = Hi-imp, when FM = L).	Pull-up at outside (Vref).
29	MUTE CTL	P14-0	O	Output (Nch)	Hi-imp	L	MUTE control terminal (when MUTE ON = L).	Pull-up at outside (Vcc).
30	F/R CTL	P14-1	O	Output (Nch)	Hi-imp	—	HEAD select terminal (when FWD = Hi-imp, when REV = L).	Pull-up at outside (Vcc).
31	BST CTL	P14-2	O	Output (Nch)	L	Hi-imp	Tone control terminal (when BOOST ON = Hi-imp, when OFF = L).	Pull-up at outside (Vcc).
32	IF REQ	P14-3	O	Output (Nch)	Hi-imp	L	IF REQ control terminal (when REQ = Hi-imp).	Pull-up at outside (Vref).
33	HOLD SW	IN2	I	Input	—	—	HOLDER detect input (when HOLDER CLOSE = H).	Pull-up at outside (V_{LCD}).
34	R DATA IN	K0	I	Input	L	VCC	Communication request from the remote controller. (H = VCC).	A/D input.
35	HOLDER, TUME	K1	I	Input	—	—	HOLDER detect and TAPE error erase detect terminal.	A/D input.
36	F/R SW	K2	I	Input	—	—	TAPE rotating direction detect terminal.	A/D input.
37	HOLD SENS	K3	I	Input	L	AD Vrcl	Input when the key is pressed during HOLD (H = AD Vref).	A/D input.
38	PHOTO CTL	P1-1	O	Input/Output	L	H	Terminal for controlling the rotation detect circuit.	
39	PHOTO IN	P1-2	I	Input/Output	—	—	Rotation detect input.	Pull-down at outside.
40	AMS CTL	P1-3	O	Input/Output	L	H	AMS sensitivity select (when AMS = H, when BL.SKIP = L).	
41	AMS IN	P2-0/AD IN1	I	Input/Output	—	—	Tape sound existing or not-exiting detect (Music exists: L, music does not exist: H.	Pull-up at outside.
42	BATT DET	P2-1/AD IN2	I	Input/Output	—	—	Voltage detect input.	
43	KEY IN	P2-2	I	Input/Output	H	—	KEY input terminal.	
44	AD Vref	P2-3	I	Input/Output	—	—	Reference voltage of AD IN 1, 2.	
45	LED CTL	P3-0	O	Input/Output	L	H	LED output terminal.	
46	CS	P3-1	O	Input/Output	L	—	E^2PROM CS control terminal.	
47	M DATA I/O	P3-2	I/O	Input/Output	L	—	E^2PROM DATA I/O.	
48	M CLOCK	P3-3/BUZR	O	Input/Output	L	—	E^2PROM CLOCK terminal.	
49	BEEP	P4-0	O	Input/Output	—	—	BEEP (when TC : 1.6 kHz, when CF : 3.0 kHz).	

Pin No.	Function	Pin Name	I/O	Circuit	INT	ACT	Description	Remarks
50	MOTOR CTL	P4-1	O	Input/Output	L	H	MOTOR control terminal.	
51	MOTOR DIR	P4-1	O	Input/Output	L	H	MOTOR control terminal.	
52	MOTOR BRK	P4-2	O	Input/Output	L	H	MOTOR control terminal.	
53	REC CTL	P4-3	O	Input/Output	L	H	REC circuit control output.	
54	RADIO CTL	P5-0	O	Input/Output	H	L	RADIO system control terminal (when RADIO ON = L).	
55	AVLS CTL	P5-1	O	Input/Output	L	L	Terminal for controlling AVLS (when ON = L).	
56	AMP CTL	P5-2	O	Input/Output	L	H	AMP control output (when AMP ON = H).	
57	GRV/MB CTL	P5-3	O	Input/Output	L	H	Tone control terminal (when GRV = L, when MB = H).	
58	PM CTL	P6-0	O	Ternary output	L	H	PL control terminal.	
59	PRE AMP CTL	P6-1	O	Ternary output	Hi-imp	Hi-imp	TC/CF select output (when PRE OFF = H, when PRE ON = Hi-imp).	
60	DOLBY CTL	P6-2	O	Ternary output	Hi-imp	Hi-imp	Terminal for controlling DOLBY circuit (when OFF = H, when ON = Hi-imp).	
61	DDC2 CTL	P6-3	O	Ternary output	Hi-imp	Hi-imp	DDC control terminal (ON at Hi-imp, OFF at L).	
62	MONO/ST	MUTE	O	Output	L	—	TUNER MONO/STEREO select terminal (MONO at H).	
63	TEST	TEST			—	—	TEST terminal (Normal operation at L or NC).	Open
64	IF IN	IF IN			—	—	IF input.	
65	LOCAL/DX	DO1/OT	O	Output	L	—	TUNER sensitivity select terminal (LOCAL at H, DX at L).	
66	DO	DO2			—	—	Phase comparator output.	
67	HOLD	HOLD	I	External interrupt	H	—	External interrupt terminal.	
68	PSC	PSC			—	H	Pre-scaler output (FM at H).	
69	GND	GND			—	—	Power supply GND terminal.	
70	FM IN	FM IN			—	—	Pre-scaler input.	
71	AM IN	AM IN			—	—	AM local oscillator output.	
72	VDD	VDD			—	—	Power supply voltage.	
73	RESET	RESET			L	H	RESET terminal (H during operation).	
74	XOUT	XOUT			—	—	Terminal to which external oscillator is connected.	
75	XIN	XIN			—	—	Terminal to which external oscillator is connected.	
76	VXT	VXT			—	—	Terminal to which external capacitor is connected to stabilize crystal oscillator power supply.	
77	VLCD	VLCD			—	—	Terminal to step-up power supply voltage for LCD drive.	
78	C1	C1			—	—	Terminal to step-up power supply voltage for LCD drive.	
79	C2	C2			—	—	Terminal to step-up power supply voltage for LCD drive.	
80	VEE	VEE			—	—	Terminal for 1.5 V constant voltage power supply of LCD drive.	

SECTION 7
DIAGRAMS

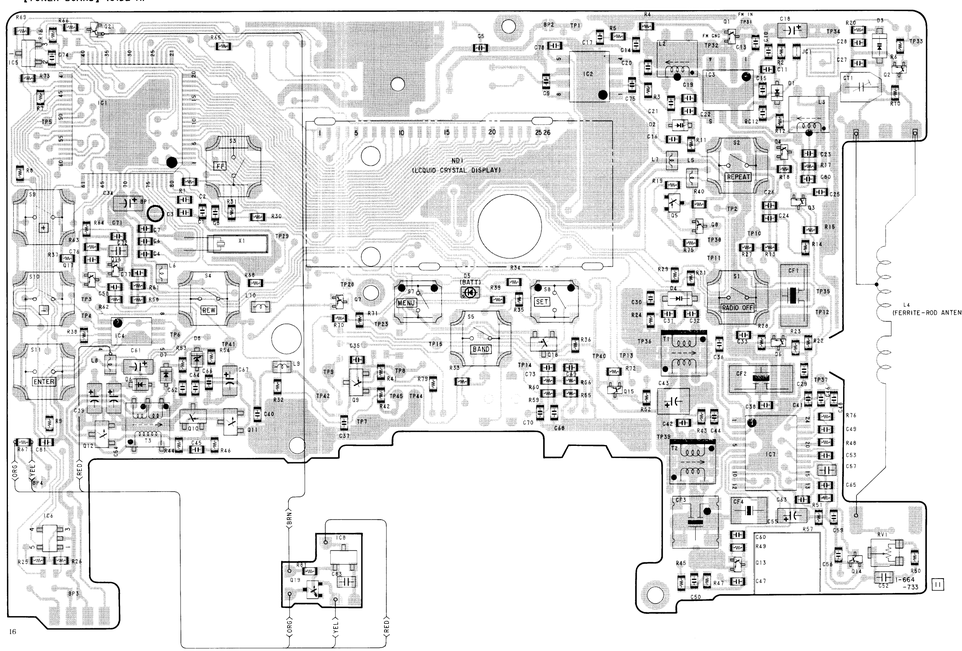
7-1. PRINTED WIRING BOARDS (TUNER SECTION)

- **Semiconductor Location**

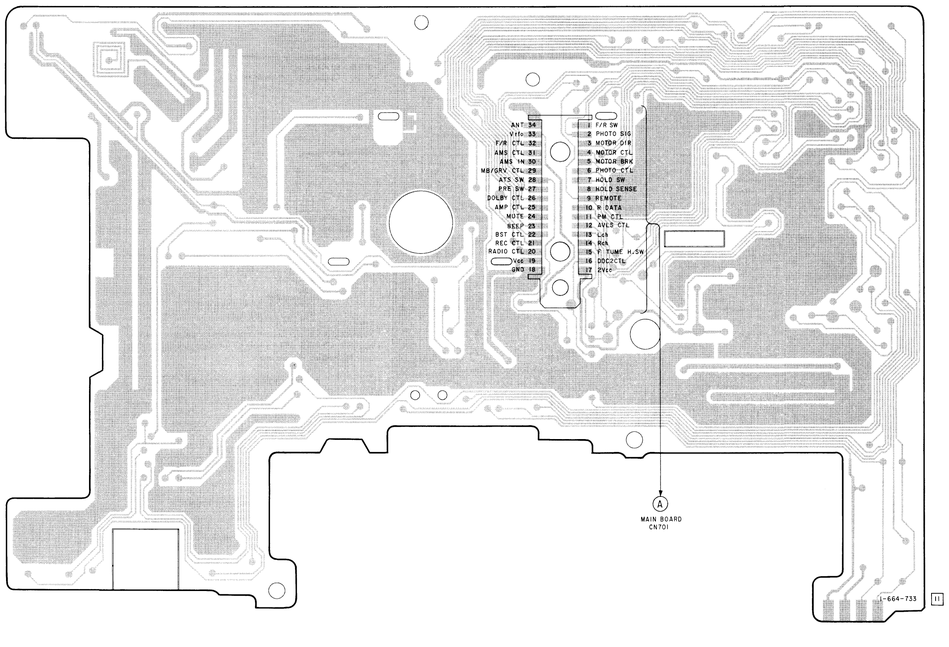
Ref. No.	Location
D1	B-9
D2	B-8
D3	A-11
D4	D-8
D5	D-6
D6	E-2
D7	E-3
D8	E-3
D9	E-5
IC1	B-2
IC2	B-7
IC3	B-9
IC4	E-2
IC5	B-1
IC6	G-1
IC7	F-9
IC8	G-5
Q1	A-9
Q2	B-11
Q3	C-10
Q4	C-10
Q5	C-8
Q6	E-9
Q7	D-5
Q8	C-9
Q9	E-5
Q10	F-3
Q11	F-3
Q12	F-2
Q13	G-9
Q14	G-10
Q15	E-8
Q16	D-2
Q17	D-2
Q18	E-7
Q19	G-4
Q21	A-2

Note:
- ● : Through hole.
- : Pattern on the side which is seen.

【TUNER BOARD】(SIDE A)



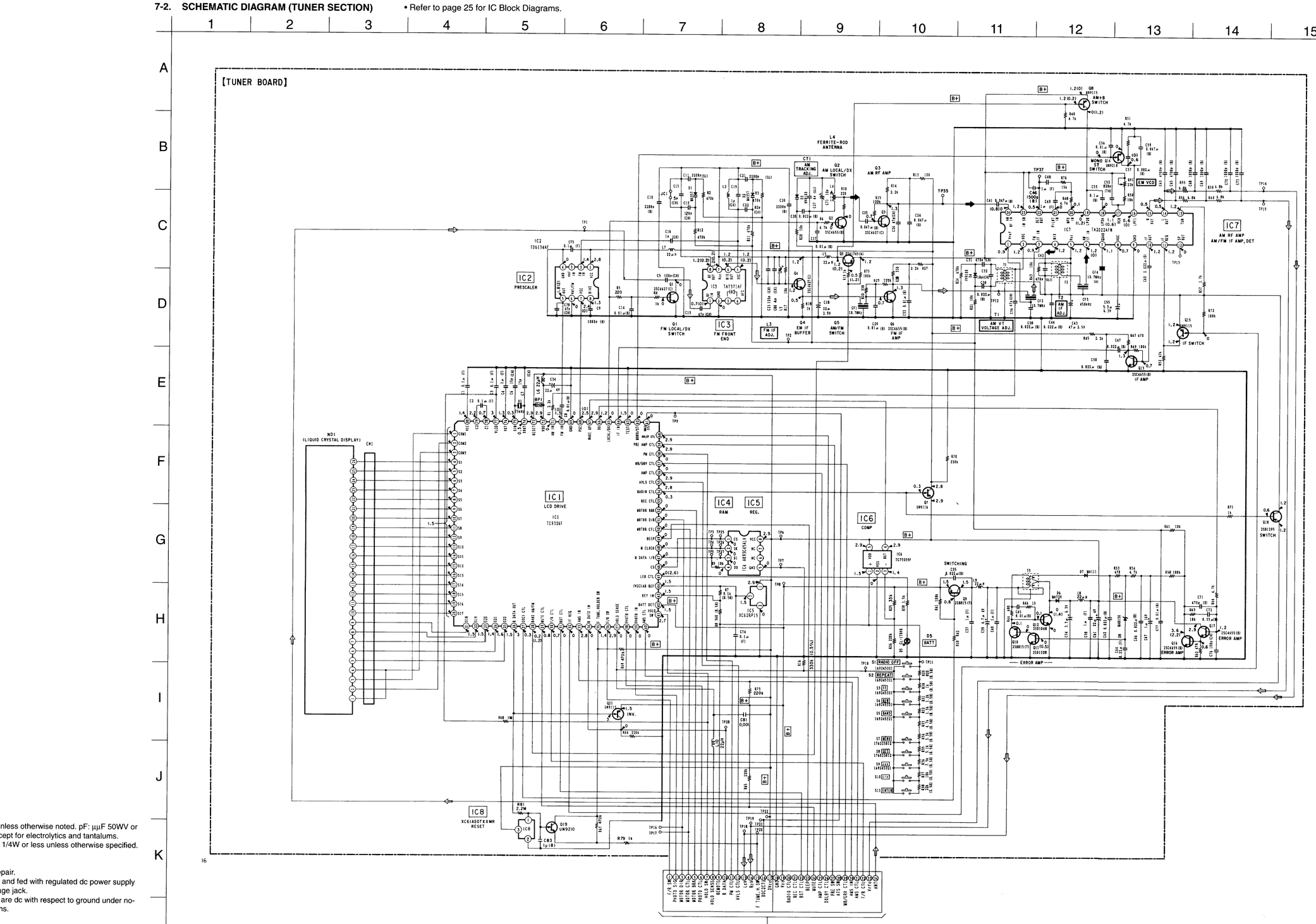
【TUNER BOARD】(SIDE B)



7-2. SCHEMATIC DIAGRAM (TUNER SECTION)

• Refer to page 25 for IC Block Diagrams.

【TUNER BOARD】

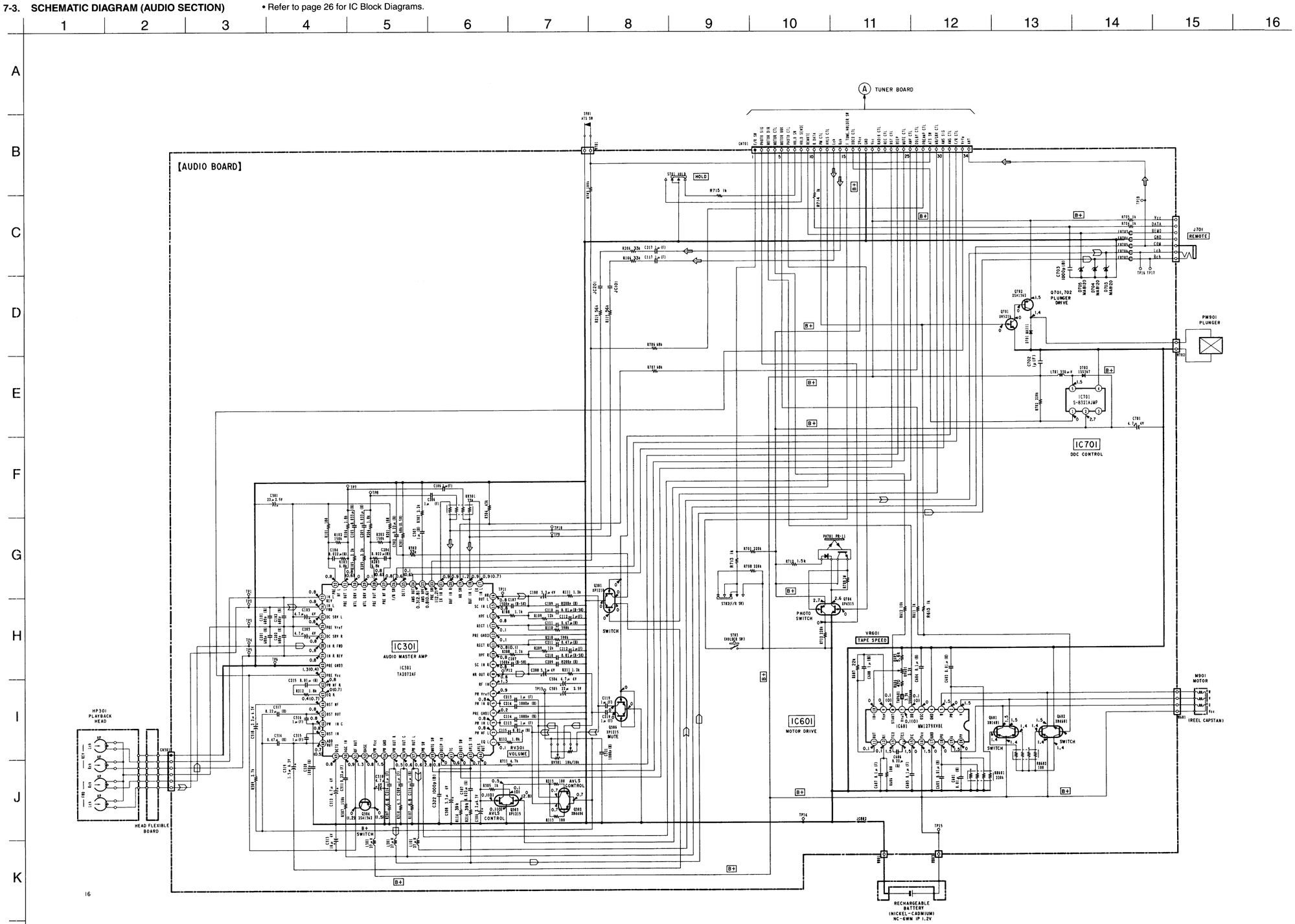


Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % : Indicates tolerance.
- B+ : B+ Line.
- ▭ : Adjustment for repair.
- Power voltage is dc 1.5V and fed with regulated dc power supply from external power voltage jack.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  No mark : FM
  ( ) : AM
  * : Can not be mueasured.
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- ⨯ : Printed inductor.
- Signal path.
  ⇨ : FM
  ➡ : AM

7-3. SCHEMATIC DIAGRAM (AUDIO SECTION)

• Refer to page 26 for IC Block Diagrams.

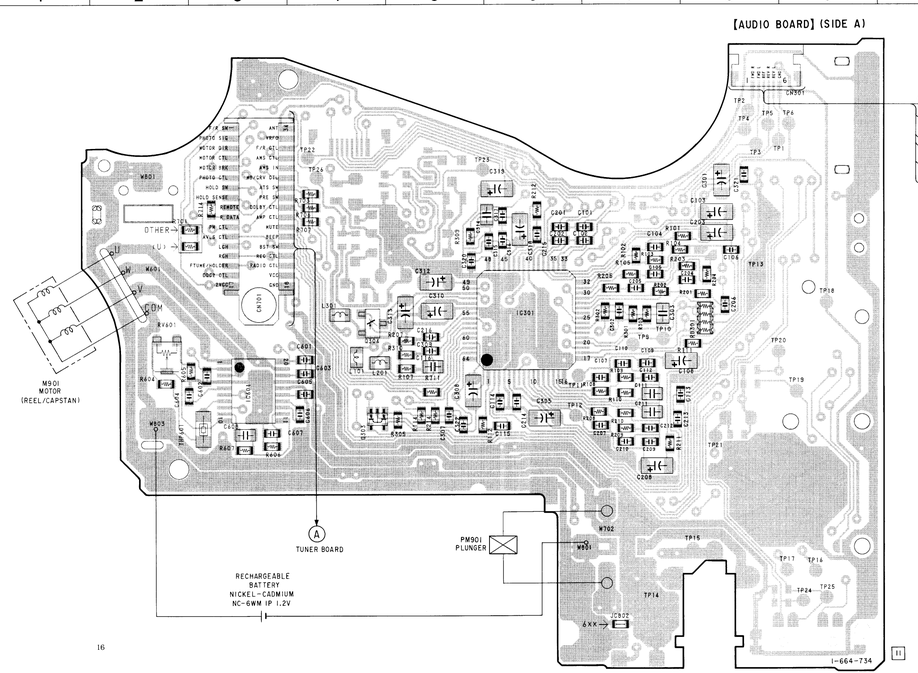


Note:

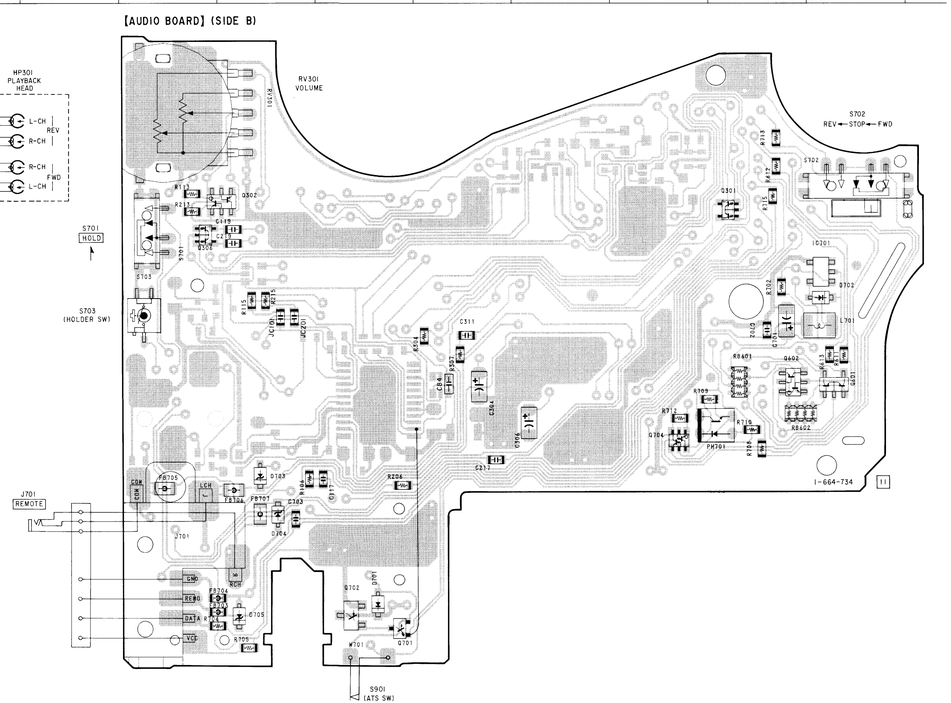
- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % : Indicates tolerance.
- B+ : B+ Line.
- ▭ : Adjustment for repair.
- Power voltage is dc 1.5V and fed with regulated dc power supply from external power voltage jack.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  No mark : PLAY
- Voltages are taken with a VOM (Input impedance 10MΩ).
  Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
  ⋁ : DECK (L-CH)
  ⋀ : DECK (R-CH)

7-4. PRINTED WIRING BOARD (AUDIO SECTION)

【AUDIO BOARD】(SIDE A)



【AUDIO BOARD】(SIDE B)



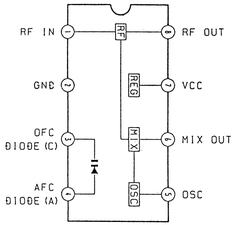
- **Semiconductor Location**

Ref. No.	Location
D703	E-13
D704	F-13
D705	G-13
IC301	D-6
IC601	D-3
IC701	C-19
Q301	C-18
Q302	B-13
Q303	E-4
Q304	D-4
Q306	C-12
Q601	D-19
Q602	D-18
Q701	G-14
Q702	G-14
Q704	E-17

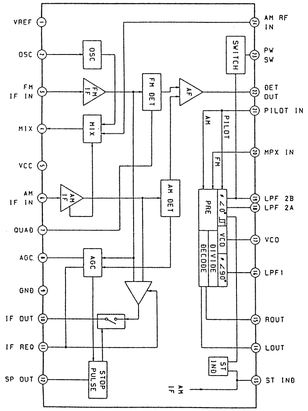
Note:
- ● : Through hole.
- ▪ : Pattern from the side which enables seeing.

• IC BLOCK DIAGRAMS

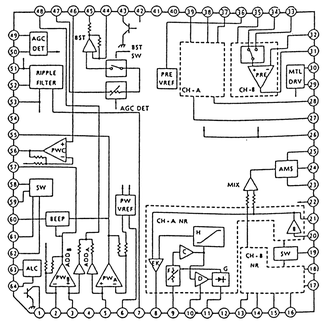
IC3 TA7371AF-EL (TUNER SECTION)



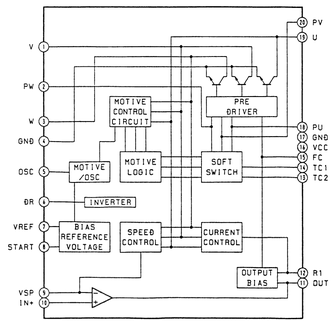
IC7 TA-2022AFN-EL (TUNER SECTION)



IC301 TA2072AF (AUDIO SECTION)



IC601 MM1279XVBE (AUDIO SECTION)



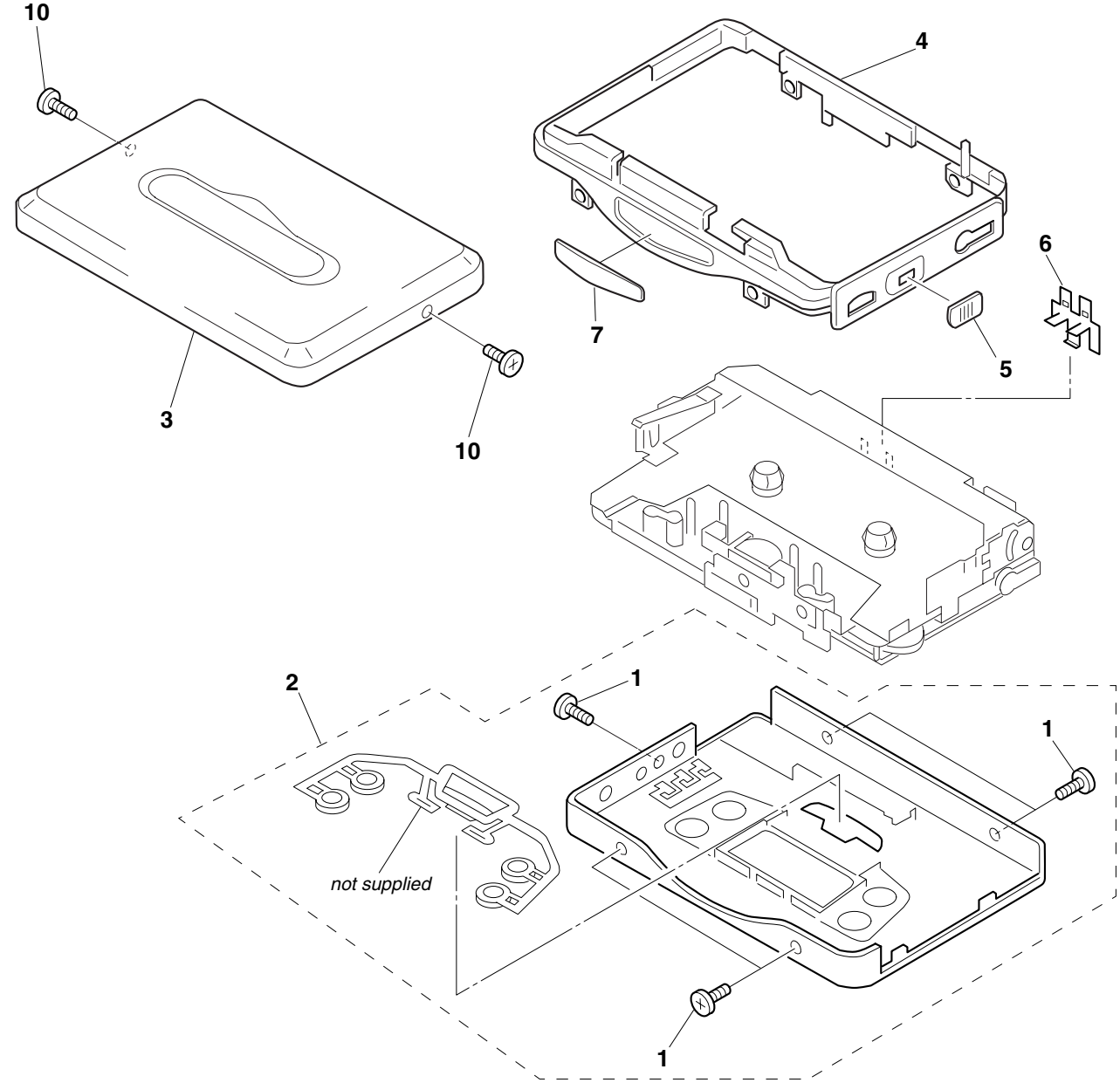
MEMO

SECTION 8
EXPLODED VIEWS

NOTE:

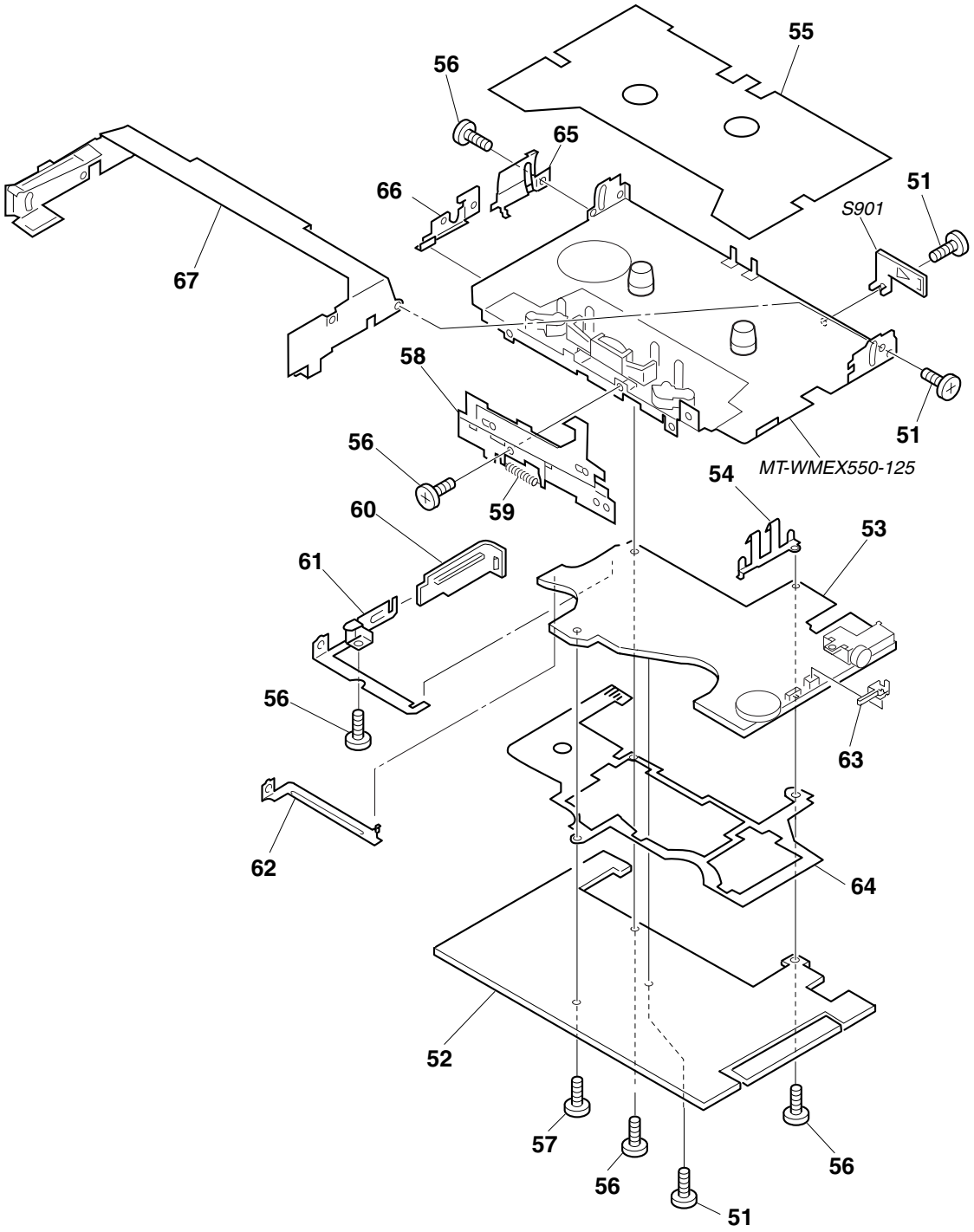
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (#mark) list is given in the last of this parts list.
- Abbreviation
  CND : Canadian model
  EA : Saudi Arabia model
  KR : Korean model
  IT : Italian model
  AUS : Australian model

8-1. CABINET SECTION



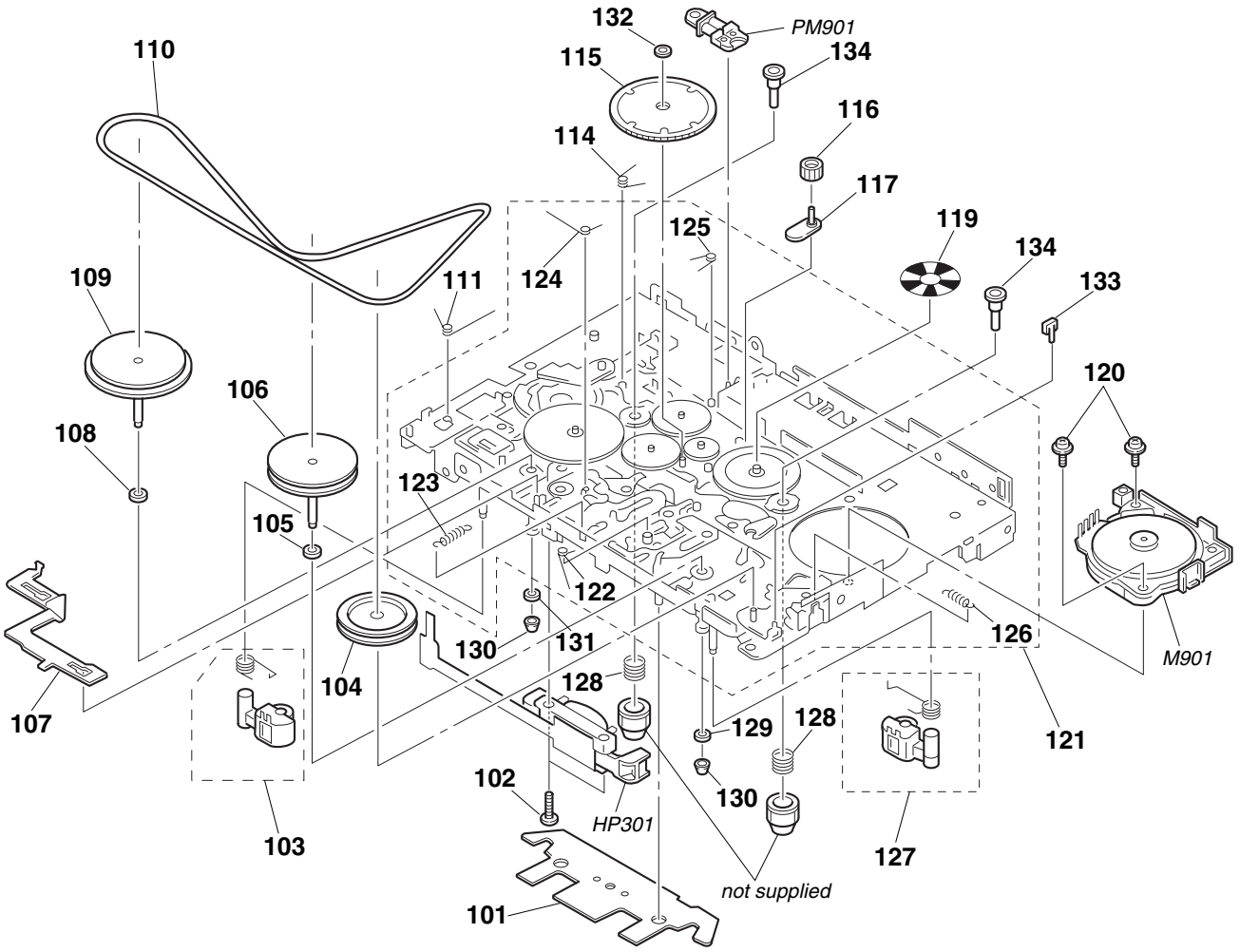
Ref. No.	Part No.	Description	Remarks
1	3-010-838-24	SCREW (M1.4X2.2)(GRAY)	
1	3-010-838-25	SCREW (M1.4X2.2)(BLACK)	
2	X-3373-582-1	CASE (FX-H) ASSY (FX655)	
2	X-3373-607-1	CASE (FX-B) ASSY (FX653)	
2	X-3373-608-1	CASE (FX-B) ASSY (FX651)	
2	X-3373-640-1	CASE (FX-S) ASSY (FX651)	
3	X-3373-573-1	LID (FX-H) ASSY, CASSETTE (FX655)	
3	X-3373-574-1	LID (FX-B) ASSY, CASSETTE (FX651,FX653)	
3	X-3373-575-1	LID (FX-S) ASSY, CASSETTE (FX651)	
4	3-009-676-01	ORNAMENT, REEL (FX651,FX653)	
4	3-009-676-11	ORNAMENT, REEL (FX651,FX655)	
5	3-930-794-11	KNOB (HOLD) (FX651,FX653)	
5	3-930-794-21	KNOB (HOLD) (FX651,FX655)	
6	3-928-465-01	DETENT, CASSETTE	
7	3-009-677-11	KNOB (OPEN)	
10	3-010-838-19	SCREW (M1.4X2)(GRAY)	
10	3-010-838-21	SCREW (M1.4X2)(BLACK)	

8-2. AUDIO, TUNER BOARD SECTION



Ref. No.	Part No.	Description	Remarks
51	3-375-114-11	SCREW (M1.7X3.5) (FX651/FX653:CND,E,EA,KR,FX655)	
51	3-375-114-41	SCREW (M1.7X3)	
52	A-3016-925-A	TUNER BOARD, COMPLETE	
53	A-3061-468-A	AUDIO BOARD, COMPLETE	
54	3-007-282-01	TERMINAL BOARD (MINUS),BATTERY	
55	3-009-662-01	COVER (A), MD (FX653:CND,E,EA,KR/FX655:E,EA,KR,AUS,TOURIST)	
55	3-009-662-11	COVER (A), MD (FX651/FX653:AEP,IT/FX655:AEP,IT,UK)	
56	3-355-424-61	SCREW, TAPPING (M1.7X6)	
57	3-010-838-59	SCREW (M1.4X4.5)	
58	X-3373-589-1	BRACKET ASSY	
59	3-009-667-01	SPRING, TENSION	
60	3-937-993-41	LID, BATTERY CASE	
61	X-3373-190-1	TERMINAL BOARD ASSY, BATTERY	
62	3-009-690-01	TERMINAL BOARD, BATTERY	
63	3-010-520-01	COVER, SW	
64	3-012-434-01	GUIDE (TU)	
65	3-009-668-01	PLATE, C LOCK	
66	3-010-173-01	BRACKET (B)	
67	X-3373-173-1	HOLDER ASSY, CASSETTE	
S901	1-762-793-11	SWITCH, LEAF	

8-3. MECHANISM SECTION (MT-WMEX550-125)



Ref. No.	Part No.	Description	Remarks
101	3-011-277-01	COVER (B) (Y), MD	
102	3-704-413-31	SCREW (M1.4X7.2)	
103	X-3372-850-1	PINCH LEVER (N) ASSY	
104	3-007-434-01	PULLEY (REVERSE)	
105	3-007-428-01	WASHER (R)	
106	X-3372-851-1	FLYWHEEL (R) ASSY	
107	3-007-439-01	SLIDER (LOCK)	
108	3-386-694-01	WASHER	
109	X-3372-852-1	FLYWHEEL (N) ASSY	
110	3-007-430-01	BELT	
111	3-007-960-01	SPRING (EJECT) (Y), TORSION	
114	3-007-436-01	SPRING (TRIGGER), TORSION	
115	X-3372-848-1	CLUTCH ASSY (M)	
116	3-007-435-01	GEAR (FR)	
117	X-3372-853-1	LEVER (FRG) ASSY	
119	3-007-432-01	SHEET (R), REFLECTION	
120	3-007-427-01	SCREW (IB LOCK)	

Ref. No.	Part No.	Description	Remarks
121	X-3373-245-1	CHASSIS (S) ASSY (Y)	
122	3-007-455-01	SPRING (R), TORSION	
123	3-007-458-01	SPRING (H/B), TENSION	
124	3-007-456-01	SPRING (N), TORSION	
125	3-007-454-01	SPRING (FR), TORSION	
126	3-007-457-01	SPRING (TEN), TENSION	
127	X-3372-849-1	PINCH LEVER (R) ASSY	
128	3-010-954-01	SPRING (BT), COMPRESSION	
129	3-918-943-01	WASHER, STOPPER	
130	3-366-017-01	BUSHING (CAPSTAN	
131	3-007-429-01	WASHER (R), STOPPER	
132	3-932-724-21	WASHER	
* 133	3-010-272-01	BELT, RETAINER	
134	3-010-274-01	TABLE, REEL	
HP301	1-500-420-11	HEAD, MAGNETIC (PLAYBACK)	
PM901	1-454-674-31	SOLENOID, PLUNGER	
M901	1-698-885-11	MOTOR (REEL/CAPSTAN)	

AUDIO

SECTION 9
ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board naame.

The components identified by mark ! or dotted line with mark ! are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ! sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... , uPB... , µPB... , uPC... , µPC... , uPD..., µPD...

Ref. No.	Part No.	Description			Remarks
	A-3061-468-A	AUDIO BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C102	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C103	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C106	1-115-156-11	CERAMIC CHIP	1uF		10V
C107	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C108	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C109	1-164-174-11	CERAMIC CHIP	0.0082uF	10%	25V
C110	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C111	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C112	1-115-156-11	CERAMIC CHIP	1uF		10V
C113	1-115-156-11	CERAMIC CHIP	1uF		10V
C114	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C115	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C116	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C117	1-115-156-11	CERAMIC CHIP	1uF		10V
C119	1-115-156-11	CERAMIC CHIP	1uF		10V
C201	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C202	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C203	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C204	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C205	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C206	1-115-156-11	CERAMIC CHIP	1uF		10V
C207	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C208	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C209	1-164-174-11	CERAMIC CHIP	0.0082uF	10%	25V
C210	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C211	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C212	1-115-156-11	CERAMIC CHIP	1uF		10V
C213	1-115-156-11	CERAMIC CHIP	1uF		10V
C214	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C215	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C216	1-115-156-11	CERAMIC CHIP	1uF		10V
C217	1-115-156-11	CERAMIC CHIP	1uF		10V
C219	1-115-156-11	CERAMIC CHIP	1uF		10V
C301	1-135-316-11	TANTAL. CHIP	22uF	20%	2.5V
C302	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C303	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C304	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C305	1-135-316-11	TANTAL. CHIP	22uF	20%	2.5V
C306	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C307	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C308	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C309	1-115-156-11	CERAMIC CHIP	1uF		10V
C310	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C311	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C312	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C313	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C314	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C315	1-115-156-11	CERAMIC CHIP	1uF		10V
C316	1-115-156-11	CERAMIC CHIP	1uF		10V
C317	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C318	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C319	1-107-688-11	TANTAL. CHIP	1.5uF	20%	10V
C320	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C321	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C322	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C601	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C604	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C605	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C606	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C607	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C608	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C701	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C702	1-115-156-11	CERAMIC CHIP	1uF		10V
C703	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
CN301	1-766-336-21	CONNECTOR, FFC/FPC 6P			
CN701	1-779-079-11	CONNECTOR, BOARD TO BOARD			
		< DIODE >			
D701	8-719-404-49	DIODE MA111			
D702	8-719-049-09	DIODE 1SS367-T3SONY			
D703	8-719-423-36	DIODE MA8120-H-TX			
D704	8-719-423-36	DIODE MA8120-H-TX			
D705	8-719-423-36	DIODE MA8120-H-TX			
		< FERRITE BEAD >			
FB703	1-414-385-11	INDUCTOR, FERRITE BEAD			
FB704	1-414-385-11	INDUCTOR, FERRITE BEAD			
FB705	1-414-235-11	INDUCTOR, FERRITE BEAD			
FB706	1-414-235-11	INDUCTOR, FERRITE BEAD			
FB707	1-414-235-11	INDUCTOR, FERRITE BEAD			
		< IC >			
IC301	8-759-359-76	IC TA2072AF			
IC601	8-759-356-46	IC MM1279XVBE			
IC701	8-759-460-25	IC S-8321AJMP-DNJ-T2			
		< JACK >			
J701	1-778-930-21	JACK 7P (PNONE)			

Ref. No.	Part No.	Description			Remarks
		< COIL >			
L101	1-412-011-31	INDUCTOR CHIP	27uH		
L201	1-412-011-31	INDUCTOR CHIP	27uH		
L301	1-412-011-31	INDUCTOR CHIP	27uH		
L701	1-412-034-11	INDUCTOR CHIP	330uH		
		< PHOTO INTERUPTER >			
PH701	8-719-988-15	PHTO REFLECTOR PR-11-C			
		< TRANSISTOR >			
Q301	8-729-426-51	TRANSISTOR	XP1210-TXE		
Q302	8-729-422-39	TRANSISTOR	XN4404		
Q303	8-729-426-36	TRANSISTOR	XP1215-TXE		
Q304	8-729-230-72	TRANSISTOR	2SA1362YG		
Q306	8-729-426-36	TRANSISTOR	XP1215-TXE		
Q601	8-729-403-42	TRANSISTOR	XN1401		
Q602	8-729-402-84	TRANSISTOR	XN4601		
Q701	8-729-421-26	TRANSISTOR	UN5216		
Q702	8-729-230-72	TRANSISTOR	2SA1362YG		
Q704	8-729-425-46	TRANSISTOR	XP4315-TXE		
		< RESISTOR >			
JC101	1-216-864-11	METAL CHIP	0	5%	1/16W
JC201	1-216-864-11	METAL CHIP	0	5%	1/16W
JC802	1-216-864-11	METAL CHIP	0	5%	1/16W
R101	1-216-812-11	METAL CHIP	180	5%	1/16W
R102	1-216-847-11	METAL CHIP	150K	5%	1/16W
R103	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R104	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R105	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R106	1-216-839-11	METAL CHIP	33K	5%	1/16W
R107	1-216-795-11	METAL GLAZE	6.8	5%	1/16W
R108	1-218-270-11	METAL GLAZE	1.1K	5%	1/16W
R109	1-216-834-11	METAL CHIP	12K	5%	1/16W
R110	1-216-852-11	METAL CHIP	390K	5%	1/16W
R111	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R112	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R113	1-216-809-11	METAL CHIP	100	5%	1/16W
R114	1-216-840-11	METAL CHIP	39K	5%	1/16W
R115	1-216-842-11	METAL CHIP	56K	5%	1/16W
R201	1-216-812-11	METAL CHIP	180	5%	1/16W
R202	1-216-847-11	METAL CHIP	150K	5%	1/16W
R203	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R204	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R205	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R206	1-216-839-11	METAL CHIP	33K	5%	1/16W
R207	1-216-795-11	METAL GLAZE	6.8	5%	1/16W
R208	1-218-270-11	METAL GLAZE	1.1K	5%	1/16W
R209	1-216-834-11	METAL CHIP	12K	5%	1/16W
R210	1-216-852-11	METAL CHIP	390K	5%	1/16W
R211	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R212	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R213	1-216-809-11	METAL CHIP	100	5%	1/16W
R214	1-216-840-11	METAL CHIP	39K	5%	1/16W
R215	1-216-842-11	METAL CHIP	56K	5%	1/16W
R301	1-218-891-11	METAL GLAZE	68K	0.50%	1/16W
R302	1-216-839-11	METAL CHIP	33K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R303	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R304	1-218-295-11	METAL GLAZE	43K	5%	1/16W
R305	1-216-821-11	METAL CHIP	1K	5%	1/16W
R307	1-216-847-11	METAL CHIP	150K	5%	1/16W
R309	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R310	1-216-793-11	METAL GLAZE	4.7	5%	1/16W
R604	1-216-817-11	METAL CHIP	470	5%	1/16W
R605	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R606	1-216-809-11	METAL CHIP	100	5%	1/16W
R607	1-216-837-11	METAL CHIP	22K	5%	1/16W
R611	1-216-821-11	METAL CHIP	1K	5%	1/16W
R612	1-216-833-11	METAL CHIP	10K	5%	1/16W
R613	1-216-821-11	METAL CHIP	1K	5%	1/16W
R701	1-216-849-11	METAL CHIP	220K	5%	1/16W
R702	1-216-849-11	METAL CHIP	220K	5%	1/16W
R703	1-216-845-11	METAL CHIP	100K	5%	1/16W
R704	1-216-821-11	METAL CHIP	1K	5%	1/16W
R705	1-216-821-11	METAL CHIP	1K	5%	1/16W
R706	1-216-843-11	METAL CHIP	68K	5%	1/16W
R707	1-216-843-11	METAL CHIP	68K	5%	1/16W
R708	1-216-849-11	METAL CHIP	220K	5%	1/16W
R709	1-216-857-11	METAL CHIP	1M	5%	1/16W
R710	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R711	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R712	1-216-849-11	METAL CHIP	220K	5%	1/16W
R713	1-216-821-11	METAL CHIP	1K	5%	1/16W
R714	1-216-821-11	METAL CHIP	1K	5%	1/16W
R715	1-216-821-11	METAL CHIP	1K	5%	1/16W
		< CONPOSITION CIRCUIT BLOCK >			
RB301	1-233-872-21	RES, NETWORK (CHIP TYPE)			
RB601	1-233-873-21	RES, NETWORK (CHIP TYPE)			
RB602	1-233-576-11	RES, CHIP NETWORK 100			
		< VARIABLE RESISTOR >			
RV301	1-225-342-11	RES, VAR, CARBON 10K/10K (VOLUME)			
RV601	1-223-576-11	RES, ADJ, METAL GLAZE 2.2K			
		< SWITCH >			
S701	1-572-922-11	SWITCH, SLIDE (HOLD)			
S702	1-572-581-11	SWITCH, SLIDE			
S703	1-762-970-21	SWITCH, PUSH (1 KEY)			
		< THERMISTOR(POSITIVE) >			
THP601	1-810-794-11	THERMISTOR, POSITIVE			
**********					
	A-3016-925-A	TUNER BOARD, COMPLETE			
		**********			
*	3-012-429-01	HOLDER (LCD)			
		< CAPACITOR >			
C1	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C2	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C3	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C4	1-115-156-11	CERAMIC CHIP	1uF		10V
C5	1-162-927-11	CERAMIC CHIP	100PF	5%	50V

TUNER

Ref. No.	Part No.	Description			Remarks
C6	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C7	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C8	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C9	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C10	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C11	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C12	1-162-928-11	CERAMIC CHIP	120P	5%	50V
C13	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C14	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C15	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C16	1-162-905-11	CERAMIC CHIP	1PF	0.25PF	50V
C17	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C18	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C19	1-162-905-11	CERAMIC CHIP	1PF	0.25PF	50V
C20	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C21	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C22	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C23	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C24	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C25	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C26	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C27	1-162-935-11	CERAMIC CHIP	4PF	0.25PF	50V
C28	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C29	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C30	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C31	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C32	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C33	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C34	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C35	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C36	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C37	1-115-156-11	CERAMIC CHIP	1uF		10V
C38	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C39	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C40	1-115-156-11	CERAMIC CHIP	1uF		10V
C41	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C42	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C43	1-104-908-11	TANTAL. CHIP	47uF	20%	2.5V
C44	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C45	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C46	1-162-965-11	CERAMIC CHIP	1500P	10%	50V
C47	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C48	1-115-156-11	CERAMIC CHIP	1uF		10V
C49	1-115-156-11	CERAMIC CHIP	1uF		10V
C50	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C52	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C53	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C54	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C55	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C56	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C57	1-164-345-11	CERAMIC CHIP	0.082uF	10%	25V
C58	1-115-156-11	CERAMIC CHIP	1uF		10V
C59	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C60	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C61	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C62	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C63	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C64	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C65	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C66	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V

Ref. No.	Part No.	Description			Remarks
C67	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C68	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C69	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C70	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C71	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C72	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C73	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C74	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C75	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C76	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C77	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C78	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C80	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V
C81	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C83	1-115-156-11	CERAMIC CHIP	1uF		10V
		< FILTER >			
CF1	1-767-313-11	FILTER, CERAMIC 10.7MHz			
CF2	1-767-313-11	FILTER, CERAMIC 10.7MHz			
CF3	1-767-480-11	FILTER, AM CERAMIC 450KHz			
CF4	1-767-357-11	FILTER, CERAMIC 10.7MHz			
		< CONNECTOR >			
CN1	1-694-248-11	CONDUCTIVE BOARD, CONNECTION			
		< TRIMMER >			
CT1	1-141-327-11	CAP, CHIP TYPE TRIMMER 10PF			
		< DIODE >			
D1	8-719-053-30	DIODE MA2S357-(TX). SO			
D2	8-719-053-30	DIODE MA2S357-(TX). SO			
D3	8-719-055-61	DIODE HVR100-9TRU			
D4	8-719-055-61	DIODE HVR100-9TRU			
D5	8-719-051-01	DIODE CL-170HR-CD-T (BATT)			
D6	8-719-420-51	DIODE MA729			
D7	8-719-404-49	DIODE MA111			
D8	8-719-420-87	DIODE MA8130			
		< IC >			
IC1	8-759-457-71	IC TC9326F			
IC2	8-759-234-31	IC TD6134AF			
IC3	8-759-362-23	IC TA7371AF-EL			
IC4	8-759-527-64	IC AK93C45-SFU (CND)			
IC4	8-759-527-65	IC AK93C45-SFE (EXCEPT CND, AEP, UK, Australian, IT, EA)			
IC4	8-759-527-66	IC AK93C45-SFEH (AEP, UK, Australian, IT, EA)			
IC5	8-759-457-70	IC XC62RP1602MR			
IC6	8-759-387-31	IC TC75S55F(TE85R)			
IC7	8-759-362-25	IC TA-2022AFN-EL			
IC8	8-759-445-08	IC XC61ASØTXXMR			
		< COIL >			
L1	1-216-864-11	METAL CHIP	0	5%	1/16W
L2	1-416-180-11	COIL (WITH CORE) (FM-OSC)			
L3	1-416-181-11	COIL (WITH CORE) (FM-MIX)			
L4	1-501-812-11	ANTENNA, FERRITE-ROD (MW)			
L5	1-412-010-41	INDUCTOR CHIP	22uH		
L6	1-412-010-41	INDUCTOR CHIP	22uH		
L7	1-412-010-41	INDUCTOR CHIP	22uH		
L8	1-412-010-41	INDUCTOR CHIP	22uH		
L9	1-412-010-41	INDUCTOR CHIP	22uH		
L10	1-412-010-41	INDUCTOR CHIP	22uH		

Ref. No.	Part No.	Description			Remarks
		< LIQUID CRYSTAL DISPLAY >			
ND1	1-801-656-11	DISPLAY PANEL, LIQUID CRYSTAL			
		< TRANSISTOR >			
Q1	8-729-037-89	TRANSISTOR 2SC4627-C(TXE)			
Q2	8-729-028-69	TRANSISTOR 2SC4655-BC(TX)			
Q3	8-729-037-89	TRANSISTOR 2SC4627-C(TXE)			
Q4	8-729-037-89	TRANSISTOR 2SC4627-C(TXE)			
Q5	8-729-823-86	TRANSISTOR 2SA1745			
Q6	8-729-028-69	TRANSISTOR 2SC4655-BC(TX)			
Q7	8-729-428-95	TRANSISTOR UN9116-QRS-(TXE)			
Q8	8-729-037-63	TRANSISTOR UN9115J-(TX).SO			
Q9	8-729-800-71	TRANSISTOR 2SB815B7-TB			
Q10	8-729-800-71	TRANSISTOR 2SB815B7-TB			
Q11	8-729-420-68	TRANSISTOR 2SD1328-R-TX			
Q12	8-729-800-37	TRANSISTOR 2SD1048-X7			
Q13	8-729-028-69	TRANSISTOR 2SC4655-BC(TX)			
Q14	8-729-037-71	TRANSISTOR UN9210J-(TX).SO			
Q15	8-729-037-63	TRANSISTOR UN9115J-(TX).SO			
Q16	8-729-028-69	TRANSISTOR 2SC4655-BC(TX)			
Q17	8-729-028-69	TRANSISTOR 2SC4655-BC(TX)			
Q18	8-729-807-87	TRANSISTOR 2SB1295-UL6			
Q19	8-729-037-71	TRANSISTOR UN9210J-(TX).SO			
Q21	8-729-037-63	TRANSISTOR UN9115J-(TX).SO			
		< RESISTOR >			
R1	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R2	1-216-853-11	METAL CHIP	470K	5%	1/16W
R3	1-216-853-11	METAL CHIP	470K	5%	1/16W
R4	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5	1-216-829-11	METAL CHIP	220K	5%	1/16W
R6	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R7	1-218-870-11	METAL GLAZE	9.1K	0.50%	1/16W
R8	1-218-836-11	METAL GLAZE	360	0.50%	1/16W
R9	1-216-833-11	METAL CHIP	10K	5%	1/16W
R10	1-216-813-11	METAL CHIP	220	5%	1/16W
R11	1-216-853-11	METAL CHIP	470K	5%	1/16W
R12	1-216-853-11	METAL CHIP	470K	5%	1/16W
R13	1-216-809-11	METAL CHIP	100	5%	1/16W
R14	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R15	1-216-845-11	METAL CHIP	100K	5%	1/16W
R16	1-216-851-11	METAL CHIP	330K	5%	1/16W
R17	1-216-833-11	METAL CHIP	10K	5%	1/16W
R18	1-216-821-11	METAL CHIP	1K	5%	1/16W
R19	1-216-821-11	METAL CHIP	1K	5%	1/16W
R20	1-216-833-11	METAL CHIP	10K	5%	1/16W
R21	1-216-833-11	METAL CHIP	10K	5%	1/16W
R22	1-216-815-11	METAL CHIP	330	5%	1/16W
R23	1-216-845-11	METAL CHIP	100K	5%	1/16W
R24	1-216-853-11	METAL CHIP	470K	5%	1/16W
R25	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R26	1-216-849-11	METAL CHIP	220K	5%	1/16W
R27	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R28	1-216-815-11	METAL CHIP	330	5%	1/16W
R29	1-218-845-11	METAL GLAZE	820	0.50%	1/16W
R30	1-218-847-11	METAL GLAZE	1K	0.50%	1/16W

Ref. No.	Part No.	Description			Remarks
R31	1-218-849-11	METAL GLAZE	1.2K	0.50%	1/16W
R32	1-218-851-11	METAL GLAZE	1.5K	0.50%	1/16W
R33	1-218-863-11	METAL GLAZE	4.7K	0.50%	1/16W
R34	1-218-859-11	METAL GLAZE	3.3K	0.50%	1/16W
R35	1-218-864-11	METAL GLAZE	5.1K	0.50%	1/16W
R36	1-218-868-11	METAL GLAZE	7.5K	0.50%	1/16W
R37	1-218-871-11	METAL GLAZE	10K	0.50%	1/16W
R38	1-218-879-11	METAL GLAZE	22K	0.50%	1/16W
R39	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R40	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R41	1-216-845-11	METAL CHIP	100K	5%	1/16W
R42	1-216-820-11	METAL CHIP	820	5%	1/16W
R43	1-216-833-11	METAL CHIP	10K	5%	1/16W
R44	1-216-819-11	METAL CHIP	680	5%	1/16W
R45	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R46	1-216-799-11	METAL CHIP	15	5%	1/16W
R47	1-216-817-11	METAL CHIP	470	5%	1/16W
R48	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R49	1-216-845-11	METAL CHIP	100K	5%	1/16W
R50	1-216-833-11	METAL CHIP	10K	5%	1/16W
R51	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R52	1-216-841-11	METAL CHIP	47K	5%	1/16W
R53	1-216-817-11	METAL CHIP	470	5%	1/16W
R54	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R55	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R56	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R57	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R58	1-216-845-11	METAL CHIP	100K	5%	1/16W
R59	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R60	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R61	1-216-833-11	METAL CHIP	10K	5%	1/16W
R62	1-216-841-11	METAL CHIP	47K	5%	1/16W
R63	1-216-833-11	METAL CHIP	10K	5%	1/16W
R64	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R65	1-216-849-11	METAL CHIP	220K	5%	1/16W
R66	1-216-849-11	METAL CHIP	220K	5%	1/16W
R67	1-216-853-11	METAL CHIP	470K	5%	1/16W
R68	1-216-857-11	METAL CHIP	1M	5%	1/16W
R69	1-216-853-11	METAL CHIP	470K	5%	1/16W
R70	1-216-849-11	METAL CHIP	220K	5%	1/16W
R71	1-216-821-11	METAL CHIP	1K	5%	1/16W
R72	1-216-845-11	METAL CHIP	100K	5%	1/16W
R73	1-216-849-11	METAL CHIP	220K	5%	1/16W
R75	1-216-845-11	METAL CHIP	100K	5%	1/16W
R76	1-216-835-11	METAL CHIP	15K	5%	1/16W
R79	1-216-821-11	METAL CHIP	1K	5%	1/16W
R81	1-216-861-11	METAL CHIP	2.2K	5%	1/16W
		< VARIABLE RESISTOR >			
RV1	1-223-578-11	RES, ADJ, METAL GLAZE 22K			
		< SWITCH >			
S1	1-692-453-11	SWITCH, KEY BOARD (RADIO OFF)			
S2	1-692-453-11	SWITCH, KEY BOARD (REPEAT)			
S3	1-692-453-11	SWITCH, KEY BOARD (FF)			
S4	1-692-453-11	SWITCH, KEY BOARD (REW)			
S5	1-692-453-11	SWITCH, KEY BOARD (BAND)			

TUNER

Ref. No.	Part No.	Description	Remarks
S7	1-771-053-11	SWITCH, KEY BOARD (MENU)	
S8	1-771-053-11	SWITCH, KEY BOARD (SET)	
S9	1-692-453-11	SWITCH, KEY BOARD (TUNING +)	
S10	1-692-453-11	SWITCH, KEY BOARD (TUNING -)	
S11	1-692-453-11	SWITCH, KEY BOARD (ENTER)	
		< TRANSFORMER >	
T1	1-416-182-11	COIL (AM-OSC)	
T2	1-416-183-11	COIL (AM-MIX)	
T3	1-423-745-11	TRANSFORMER, DC-DC CONVERTER	
		< VIBRATOR >	
X1	1-577-262-11	VIBRATOR, CRYSTAL 75KHz	
**********			
		MISCELLANEOUS	
		**********	
HP301	1-500-420-11	HEAD, MAGNETIC (PLAYBACK)	
M901	1-698-885-11	MOTOR (REEL/CAPSTAN)	
PM901	1-454-674-31	SOLENOID, PLUNGER	
S901	1-762-793-11	SWITCH, LEAF	
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Ref. No.	Part No.	Description	Remarks
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-475-182-11	REMOTE CONTROL UNIT(RM-WMF655)	(FX655)
	1-505-536-11	HEADPHONE (WITH REMOCON) (FX653)	
!	1-528-252-11	BATTERY CHARGER (BC-7S) (FX655:UK)	
!	1-528-434-11	BATTERY CHARGER (BC-7SG) (FX655:AUS)	
	1-528-543-11	BATTERY,NICKEL CADMIUM(NC-6WM)	(FX653:CND,E,EA,KR/FX655:E,EA,KR,AUS,TOURIST)
	1-528-543-22	BATTERY,NICKEL CADMIUM(NC-6WM)	(FX651/FX653:AEP,IT/FX655:AEP,IT,UK)
!	1-528-644-11	BATTERY CHARGER (BC-7DT2)	(FX653:E/FX655:E,TOURIST)
!	1-528-661-11	BATTERY CHARGER (BC-7DR)	(FX653:KR/FX655:KR)
!	1-528-713-11	BATTERY CHARGER (BC-7DC) (FX653:CND)	
!	1-528-744-11	BATTERY CHARGER (BC-7DY)	(FX651/FX653:AEP,IT,EA/FX655:AEP,IT,EA)
	1-569-007-11	ADAPTOR, CONVERSION 2P	(FX653:E/FX655:E,TOURIST)
	1-759-213-11	CASE, BATTERY	
	3-008-521-01	CASE, BATTERY CARRYING	
	3-012-004-01	CASE, INDIVIDUAL (FX651)	
	3-859-782-11	MANUAL, INSTRUCTION (ENGLISH/ITALIAN)	(FX651/FX653:AEP,IT,EA/FX655:AEP,IT,UK,EA)
	3-859-782-21	MANUAL, INSTRUCTION (FRENCH/DUTCH)	(FX651/FX653:AEP/FX655:AEP)
	3-859-782-31	MANUAL, INSTRUCTION (GERMAN/SPANISH)	(FX653:AEP/FX655:AEP)
	3-859-782-41	MANUAL, INSTRUCTION (SWEDISH/PORTUGUESE)	(FX653:AEP/FX655:AEP)
	3-859-782-51	MANUAL, INSTRUCTION (ENGLISH/FRENCH)	(FX653:CND)
	3-859-782-61	MANUAL, INSTRUCTION (ENGLISH/KOREAN)	(FX653:E,KR/FX655:E,KR,AUS,TOURIST)
	3-859-782-71	MANUAL, INSTRUCTION (SPANISH/CHINESE)	(FX653:E/FX655:E,TOURIST)
	3-918-892-01	CASE, CARRYING	
	3-918-937-01	CASE, CARRYING	
	3-920-201-01	CLIP (FX653,FX655)	
	8-953-171-91	HEADPHONE MDR-ED136MP/K1 SET (FX655)	
	8-953-187-90	HEADPHONE MDR-ED136//K SET (FX651)	

The components identified by mark ! or dotted line with mark ! are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ! sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- Abbreviation
  CND : Canadian model
  EA : Saudi Arabia model
  KR : Korean model
  IT : Italian model
  AUS : Australian model

WM-FX651/FX653/FX655

SONY

SERVICE MANUAL

AEP Model
WM-FX651/FX653/FX655
E Model
WM-FX653/FX655
Australian Model
Tourist Model
WM-FX655
Canadian Model
WM-FX653

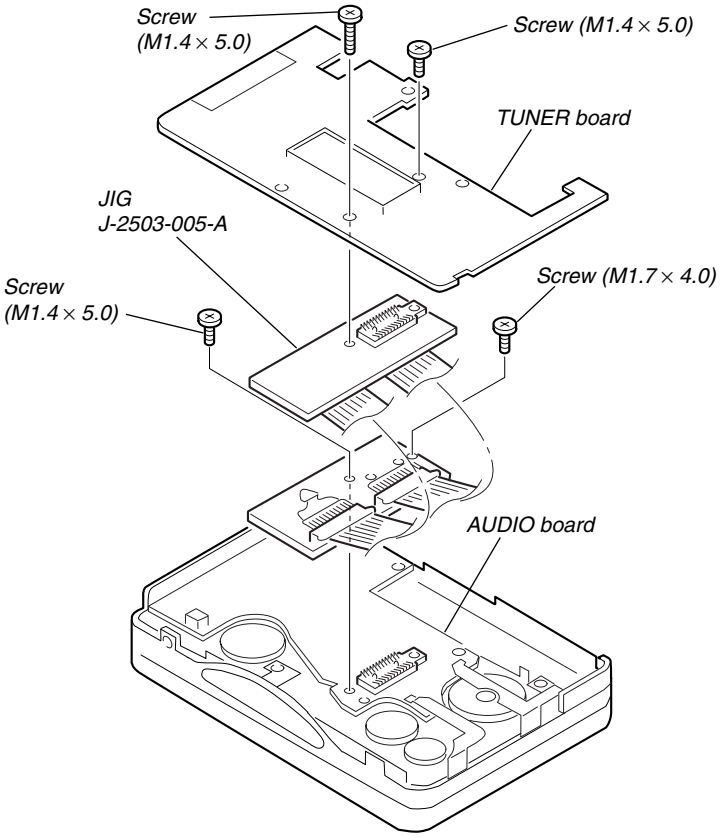
SUPPLEMENT-1

File this supplement with the Service Manual.

Subject : Change Notice of the TUNER Board Suffix from -11 to -12. (Deletion of the RESET Board) and Addition of Chinese model.

SERVICE NOTE

• Regarding the method of adjustment and voltage check, perform sections 3-1 and 3-2 of the DISASSEMBLY, and attach the JIG to the AUDIO board as shown below.



• Addition of Chainese model.

Exploded views

CN: Chinese model

Page	Ref. No.	Part No.	Description
28	55	3-009-662-01	COVER (A), MD (FX653: CND,CN,EA,E,KR/FX655: AUS,CN,EA,E,JE,KR)

Accessories & Packing Materials

CN: Chinese model

Page	Ref. No.	Part No.	Description
34		1-528-543-11	BATTERY, NICKEL CADMIUM (NC-6WM) (FX653: CND,CN,EA,E,KR/FX655: AUS,CN,EA,E,JE,KR)
		1-528-822-11	BATTERY CHARGER (BC-7DN) (FX653: CN/FX655: CN)
		3-019-020-01	CASE, INDIVIDUAL (FX653: CN)
		3-019-021-01	CASE, INDIVIDUAL (FX655: CN)
		3-859-782-61	MANUAL, INSTRUCTION (ENGLISH/KOREAN) (FX653: CN,E,KR/FX655: AUS,CN,E,JE,KR)
		3-859-782-71	MANUAL, INSTRUCTION (SPANISH/CHINESE) (FX653: CN,E/FX655: CN,E,JE)

• The TUNER board that is used in the Chinese model is 1-664-733-12 (IC1(8-759-475-78, TC9326K-006) uses the microprocessor.).

• Change notice of the TUNER board.

ELECTRICAL PARTS LIST

• TUNER BOARD

TUNER BOARD 1-664-733-11				TUNER BOARD 1-664-733-12			TUNER BOARD 1-664-733-12 IC1 is micro processor			
Ref. No.	Part No.	Description		Part No.	Description		Part No.	Description		
C5	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	1-162-919-11	CERAMIC CHIP 22PF 5%	50V	1-162-919-11	CERAMIC CHIP 22PF 5%	50V	
C83	1-115-156-11	CERAMIC CHIP 1u 5%	10V	1-109-982-91	CERAMIC CHIP 1u (B) 2012			* *		
C84				1-165-176-91	CERAMIC CHIP 47000P (B)		1-169-176-91	CERAMIC CHIP 47000P (B)		
C86				1-164-315-11	CERAMIC CHIP 470PF 5%	50V	1-164-315-11	CERAMIC CHIP 470PF 5F	50V	
IC1	8-759-457-71	IC TC9326F		8-759-457-71	IC TC9326F		8-759-475-78	IC TC9326K-006		
IC8	8-759-445-08	IC XC61ASOTXXMR		8-759-445-08	IC XC61ASOTXXMR			* *		
Q7	8-729-428-95	TRANSISTOR UN9116-QRS-(TXE)		8-729-037-64	TRANSISTOR UN9116J-(TX).SC		8-729-037-64	TRANSISTOR UN9116J-(TX).SC		
Q19	8-729-037-71	TRANSISTOR UN9210J-(TX).SO		8-729-037-71	TRANSISTOR UN9210J-(TX).SO					
R52	1-216-841-11	METAL CHIP 47K 5%	1/16W	1-216-839-11	METAL CHIP 33K 5%	1/16W	1-216-839-11	METAL CHIP 33K 5%	1/16W	
R81	1-216-861-11	METAL CHIP 2.2K 5%	1/16W	1-216-861-11	METAL CHIP 2.2M 5%	1/16W		* *		
R82	1-216-805-11	METAL CHIP 47 5%	1/16W							

* *: The TUNER board that has suffix -12, and uses TC9326F-006 (8-759-475-78) IC1, does not includes the RESET circuit.
The RESET circuit: IC8, R81, C83, Q19.

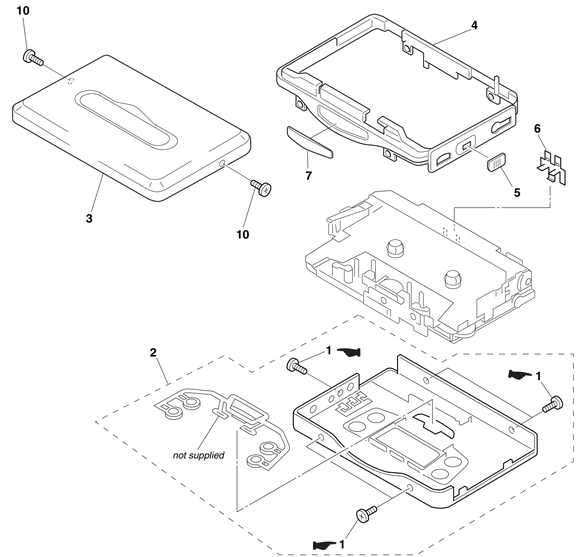
• AUDIO BOARD

Page	Before change						After change				
	Ref. No.	Part No.	Description				Part No.	Description			
30	C101	1-162-963-11	CERAMIC CHIP	680PF	10%	50V	1-164-473-11	CERAMIC CHIP	820PF	10%	50V
	C201	1-162-963-11	CERAMIC CHIP	680PF	10%	50V	1-164-473-11	CERAMIC CHIP	820PF	10%	50V
34		3-918-892-01	CASE, CARRYING				3-931-794-01	CASE, CARRYING			
		3-918-937-01	CASE, CARRYING								

CORRECTION

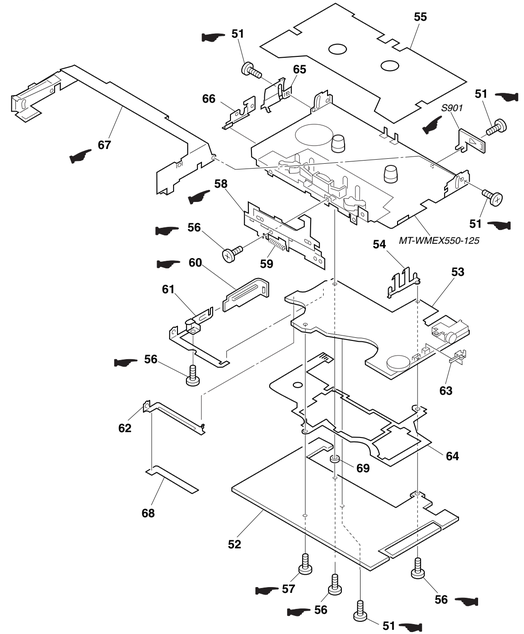
: Indicates corrected portion

8-1. CABINET SECTION



Page	Correct			Incorrect	
	Ref. No.	Part No.	Description	Part No.	Description
27	1	3-010-838-24	SCREW (M1.4X2.2) (GRAY)	3-010-838-24	SCREW (M1.4X2.2) (GRAY)(FX651,FX655)
	1	3-010-838-25	SCREW (M1.4X2.2) (BRACK)	3-010-838-25	SCREW (M1.4X2.2) (BRACK) (FX651,FX653)
	4	3-009-676-11	ORNAMENT, REEL (FX651,FX655)	3-009-676-11	ORNAMENT, REEL (FX655)
	5	3-930-794-21	KNOB (HOLD) (FX651, FX655)	3-930-794-21	KNOB (HOLD) (FX655)
	10	3-010-838-19	SCREW (M1.4X2) (GRAY)	3-704-197-13	SCREW (M1.4X2) (GRAY) (FX651,FX655)
	10	3-010-838-21	SCREW (M1.4X2) (BRACK)	3-704-197-11	SCREW (M1.4X2) (BRACK) (FX651,FX653)

8-2. AUDIO, TUNER BOARD SECTION



Page	Correct			Incorrect	
	Ref. No.	Part No.	Description	Part No.	Description
28	51	3-375-114-11	SCREW (M1.7X3.5) (FX651/FX653:CND,E,EA,KR,FX655)	3-704-197-01	SCREW (M1.4X1.6)
	51	3-375-114-41	SCREW (M1.7X3)		
	56	3-355-424-61	SCREW, TAPPING (M1.7X6)	3-375-114-41	SCREW (M1.7X3)
	57	3-010-197-59	SCREW (M1.4X4.5)	3-704-197-71	SCREW (M1.4X4.5)
	58	X-3373-589-1	BRACKET ASSY	X-3373-172-1	BRACKET ASSY
	60	3-937-993-41	LID, BATTERY CASE	3-937-993-41	LID, BATTERY CASE (BLACK) (FX651,FX653)
				3-937-993-61	LID, BATTERY CASE (GRAY) (FX655)
				3-937-993-71	LID, BATTERY CASE (GRAY) (FX651)
	67	X-3373-173-1	HOLDER ASSY, CASSETTE	X-3373-173-2	HOLDER ASSY, CASSETTE
	68			3-015-972-02	SHEET (TERMINAL BOARD)
	69			3-016-403-01	WASHER (TU)
	S901	1-762-793-11	SWITCH, LEAF	1-762-793-21	SWITCH, LEAF

DIAGRAMS

PRINTED WIRING BOARDS (TUNER SECTION)

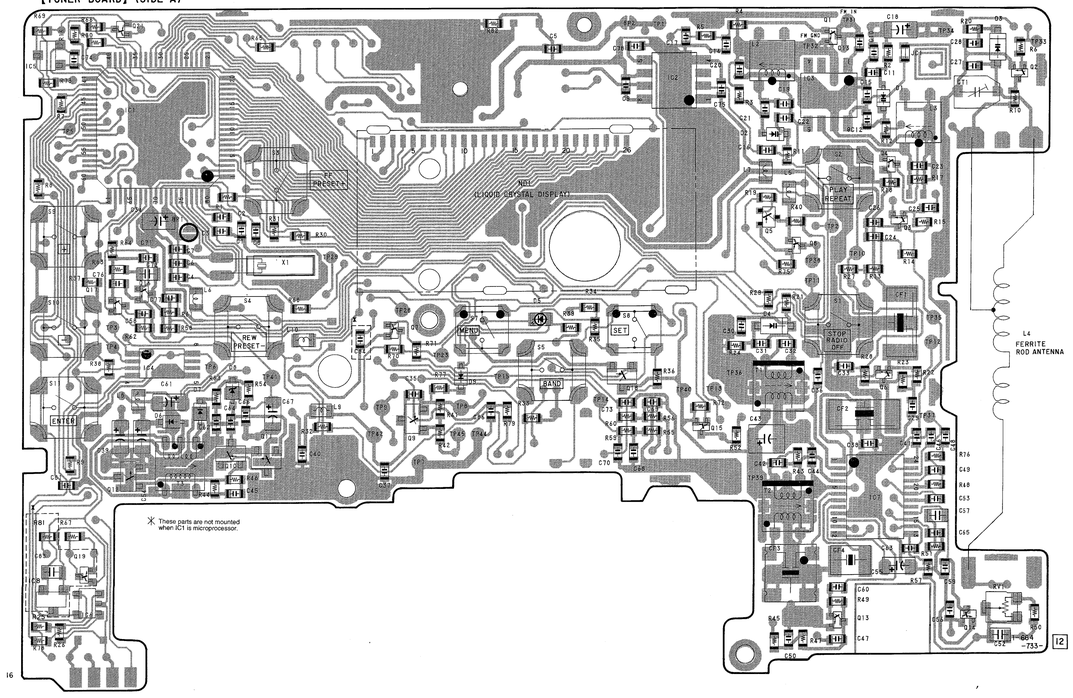
- **Semiconductor Location**

Ref. No.	Location
D1	B-9
D2	B-8
D3	A-11
D4	D-8
D5	D-6
D6	E-2
D7	E-3
D8	E-3
D9	E-5
IC1	B-2
IC2	B-7
IC3	B-9
IC4	E-2
IC5	B-1
IC6	G-1
IC7	F-9
IC8	G-1
Q1	A-9
Q2	B-11
Q3	C-10
Q4	C-10
Q5	C-8
Q6	E-9
Q7	D-5
Q8	C-9
Q9	E-5
Q10	F-3
Q11	F-3
Q12	F-2
Q13	G-9
Q14	G-10
Q15	E-8
Q16	D-2
Q17	D-2
Q18	E-7
Q19	G-1
Q21	A-2

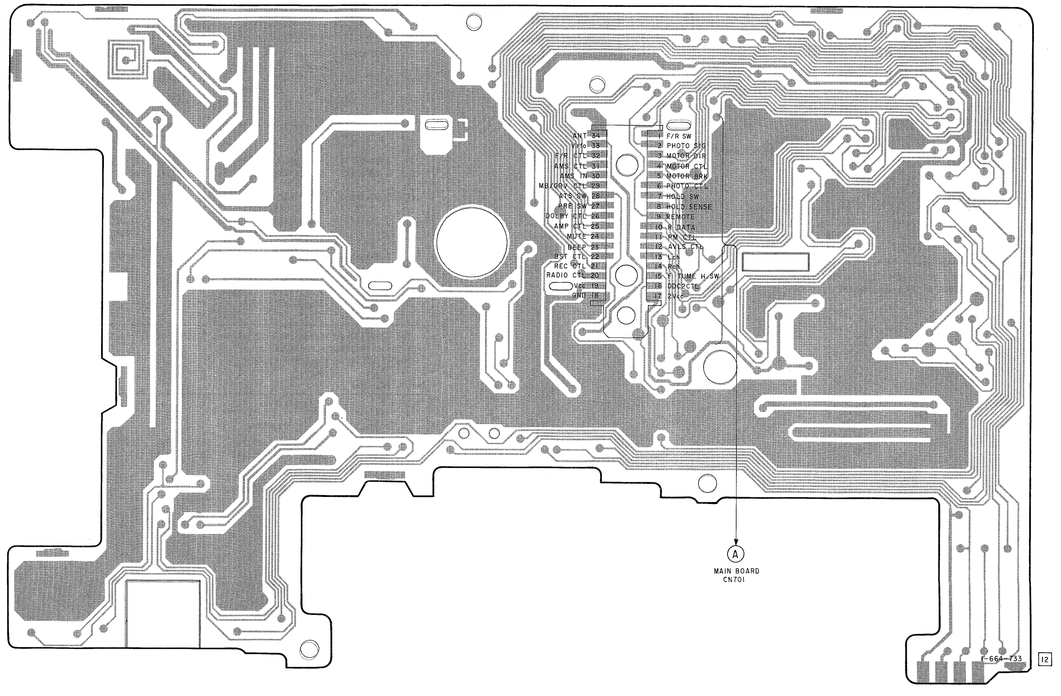
Note:

- ● : Through hole.
- ▬ : Pattern on the side which is seen.

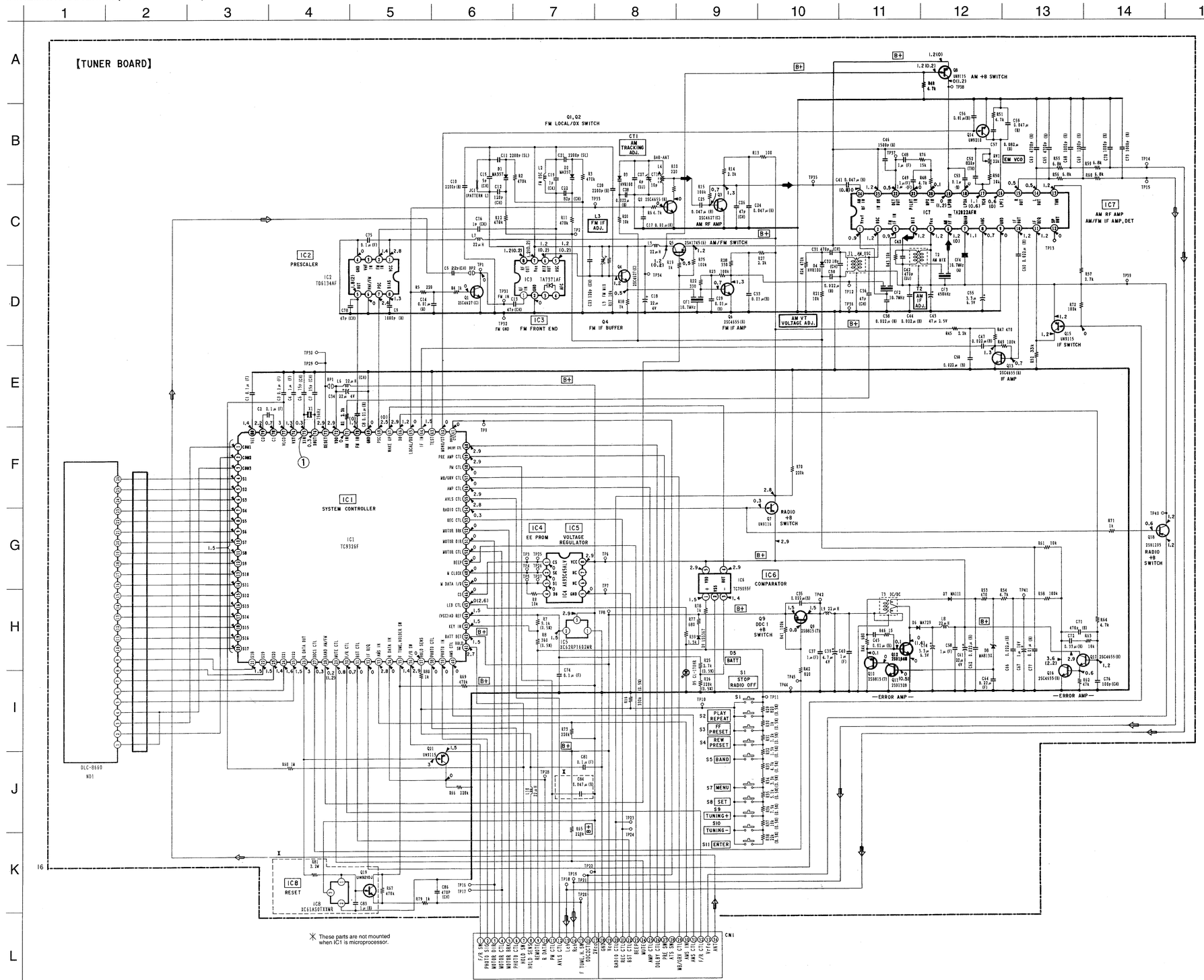
【TUNER BOARD】(SIDE A)



【TUNER BOARD】(SIDE B)



SCHEMATIC DIAGRAM (TUNER SECTION)



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % : Indicates tolerance.
- B+ : B+ Line.
- ▭ : Adjustment for repair.
- Power voltage is dc 1.5V and fed with regulated dc power supply from external power voltage jack.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  No mark : FM
  ( ) : AM
  ＊ : Can not be mueasured.
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- ⚹ : Printed inductor.
- Signal path.
  ⇨ : FM
  ➡ : AM

Printing Method for Large Sized Documents Such As Circuit Diagrams

Printing the page that exceeds A4-size two pages (or letter size) is possible by specifying the print range. (Acrobat Reader Version 4.0 or later)

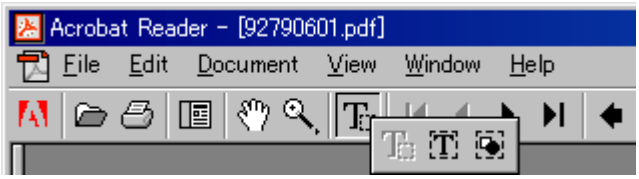
1. The enlarged print is made, if a smaller range than A4 size is specified and the A4 size is selected as a print paper.
2. Almost real sized print is made, if the range is specified, meeting the print paper size.
3. The reduced print is made, if a larger range than the print paper size is specified.

Printing by Specifying a Range

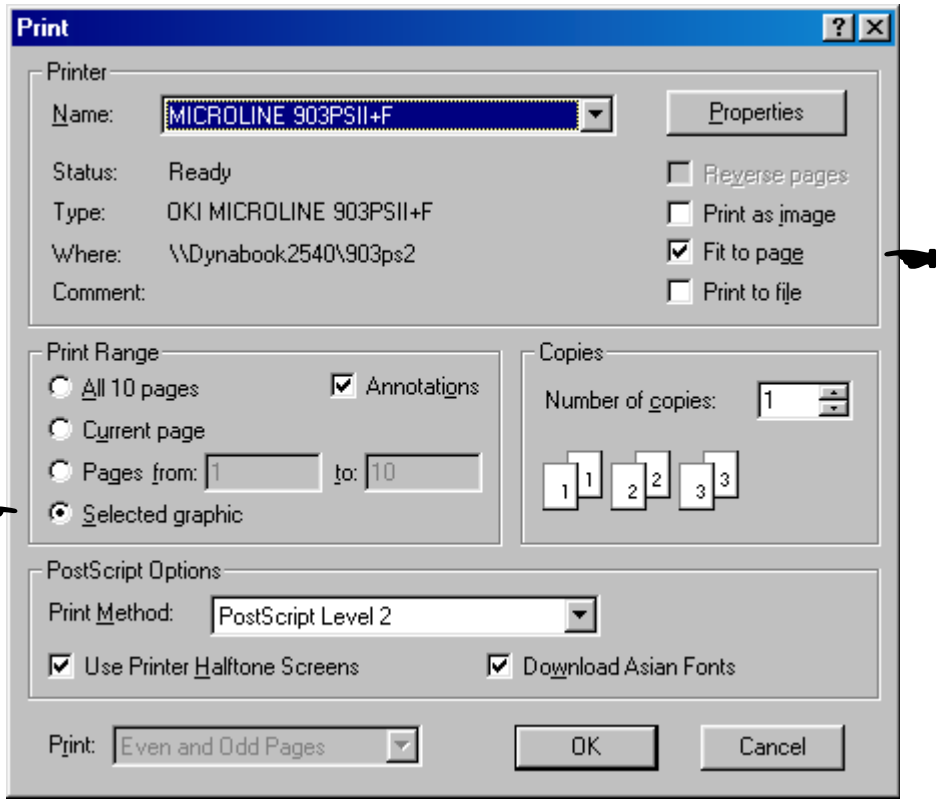
In printing out the drawings such as a schematic diagram and a printed wiring board larger than the printed paper size, they can be printed by specifying the range. (Acrobat Reader Version 4.0 or later)

1. Display the page to be printed.
2. From the File menu, select [Page Setup] and set the paper size.
3. From the Command bar, select [Graphic Select Tool].

   (Keep pressing , select)



4. Dragging the cursor, enclose the range on the page to be printed.
5. From the File menu, select [Print] and make sure that the [Selected Graphic] is already checked. Also, if [Fit to page] is checked, the selected range is enlarged or reduced (and rotated as necessary) meeting the paper size.



6. To cancel the printed range, click an arbitrary position on the screen.

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	1997.03	New
	1997.09	Supplement-1
1.1	2002.01	Correction of Part No. for IC 4 (SPM-01041)